

MIL-M-38510/383A
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~~SUPERSEDED~~
MIL-M-38510/383(USA)
9 August 1983

MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, BIPOLAR, ADVANCED LOW-POWER SCHOTTKY, TTL,
OCTAL BUFFER GATES WITH THREE-STATE OUTPUTS,
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, advanced low-power Schottky, octal bus buffer gates with three-state outputs. Two product assurance classes and a choice of case outline/lead finish are provided for each type and are reflected in the complete part number.

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

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

<u>Device type</u>	<u>Circuit</u>
01	Inverting octal buffer gate (inverting control inputs)
02	Noninverting octal buffer gate (complementary control inputs)
03	Noninverting octal buffer gates (inverting control 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>Letter</u>	<u>Case outline (see MIL-M-38510, appendix C)</u>
R	D-8 (20-lead, 1/4" x 1 1/16"), dual-in-line package
S	F-9 (20-lead, 1/4" x 1/2"), flat package
X	C-2A (20-terminal, .350" x .350"), square chip carrier package
2	C-2 (20-terminal, .350" x .350"), square chip carrier package

1.3 Absolute maximum ratings.

Supply voltage range - - - - -	-0.5 V dc to 7.0 V dc
Input voltage range - - - - -	-1.5 V dc at -18 mA to 7.0 V dc
Storage temperature range - - - - -	-65°C to 150°C
Maximum power dissipation, (P _D) per device 1/	
Device type 01 - - - - -	137.5 mW
Device types 02, 03 - - - - -	165 mW
Lead temperature (soldering 10 seconds) - -	300°C
Thermal resistance, junction to case θ _{JC} :	
Cases R, S, X, and 2- - - - -	(See MIL-M-38510, appendix C)
Junction temperature T _j 2/ - - - - -	175°C

1/ Must withstand the added P_D due to short circuit test (e.g. I₀).

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

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Rome Air Development Center (RBR-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.

1.4 Recommended operating conditions:

Supply voltage - - - - -	4.5 V dc minimum to 5.5 V dc maximum
Minimum high level input voltage (V_{IH}) - - -	2.0 V
Maximum low level input voltage (V_{IL}) - - -	0.8 V except at ($T_C = +125^\circ C$, 0.7 V)
Case operating temperature range (T_C) - - -	-55°C to +125°C

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

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

SPECIFICATION**MILITARY**

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

STANDARD**MILITARY**

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

(Copies of the specification and standard required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

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

3. REQUIREMENTS

3.1 Detail specification. The individual item requirements shall be in accordance with MIL-M-38510, and as specified herein.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-M-38510 and herein.

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

3.2.2 Truth tables. The truth tables 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 and agent activity (DESC-ECS) as a prerequisite for qualification. All qualified manufacturers schematics shall be maintained by the agent activity and will be available upon request.

3.2.4 Case outlines. The case outlines shall be as specified in 1.2.3.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions $-55^{\circ}\text{C} \leq T_C \leq +125^{\circ}\text{C}$ unless otherwise specified	Device type	Limits		Unit
				Min	Max	
High level output voltage	V _{OH1}	V _{CC} = 4.5 V, V _{IL} = 0.8 V, I _{OH} = -3 mA V _{IH} = 2.0 V (02, 03 only) T _C = 125°C, V _{IC} = 0.7 V	A11	2.4		V
High level output voltage	V _{OH2}	V _{CC} = 4.5 V, V _{IL} = 0.8 V, I _{OH} = -12 mA V _{IH} = 2.0 V (02, 03 only) T _C = 125°C, V _{IC} = 0.7 V	A11	2.0		V
Low level output voltage	V _{OL1}	V _{CC} = 4.5 V, I _{OL} = 12 mA, V _{IH} = 2.0 V, V _{IL} = 0.8 V T _C = 125°C, V _{IC} = 0.7 V	A11		0.4	V
Low level output voltage	V _{OL2}	V _{CC} = 4.5 V, I _{OL} = 18 mA, V _{IH} = 2.0 V, V _{IL} = 0.8 V T _C = 125°C, V _{IC} = 0.7 V	A11		0.45	V
Off-state (high-impedance state) output current	I _{OZH}	V _{CC} = 5.5 V, V _{OUT} = 2.7 V, V _{IH} = 2.0 V	A11		20	μA
Off-state (low-impedance state) output current	I _{OZL}	V _{CC} = 5.5 V, V _{OUT} = 0.4 V, V _{IH} = 2.0 V	A11		-20	μA
Low level input current (all inputs)	I _{IL}	V _{CC} = 5.5 V, V _{IN} = 0.4 V	A11	0	-100	μA
High level input current (all inputs)	I _{IH1}	V _{CC} = 5.5 V, V _{IN} = 2.7 V	A11		20	μA
High level input current (all inputs)	I _{IH2}	V _{CC} = 5.5 V, V _{IN} = 7.0 V	A11		100	μA
Output current 1/	I _O	V _{CC} = 5.5 V, V _{OUT} = 2.25 V	A11	-30	-112	mA
Supply current	I _{CCH}	V _{CC} = 5.5 V	Outputs high	01	10	mA
				02	17	
				03	15	
	I _{CCL}		Outputs low	01	23	
				02	28	
				03	24	
	I _{CCZ}		All outputs disabled	01	25	
				02	32	
				03	27	

See footnote at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $-55^{\circ}\text{C} \leq T_C \leq +125^{\circ}\text{C}$ unless otherwise specified	Device type	Limits	Unit
				Min	Max
Input clamp voltage	V _{IC}	V _{CC} = 4.5 V, I _{IN} = -18 mA, T _C = +25°C	All		-1.5 V
Propagation delay time (low-to-high level)	t _{PLH1}	C _L = 50 pF, R _L = 500 ohms, V _{CC} = 5.0 V	01	3	12 ns
			02	3	14
			03	3	13
Propagation delay time (high-to-low level)	t _{PHL1}		01	2	11 ns
			02,03	3	13
Output enable time to low level	t _{PZL}		01	5	20 ns
			02,03	7	25
Output enable time to high level	t _{PZH}		01	5	15 ns
			02,03	7	25
Output disable time from low level	t _{PLZ}		02	3	20 ns
			01,03	3	18
Output disable time from high level	t _{PHZ}		01,02 03	2	12 ns

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

3.3 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.

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.

3.7 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 9 (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 method 5005 and 5007, as applicable, of MIL-STD-883, except as modified herein.

TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (see table III)	
	Class S devices	Class B devices
Interim electrical parameters (method 5004)	1	1
Final electrical test parameters (method 5004)	1*, 2, 3, 7, 9, 10, 11	1*, 2, 3, 7, 9
Group A test requirements (method 5005)	1, 2, 3, 7, 8, 10, 11	1, 2, 3, 7, 8, 9, 10, 11
Group B test requirements (method 5005) subgroup 5	1, 2, 3, 9, 10, 11	N/A
Group C end-point electrical parameters (method 5005)	N/A	1, 2, 3
Group D end-point electrical parameters (method 5005)	1, 2, 3	1, 2, 3

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

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:

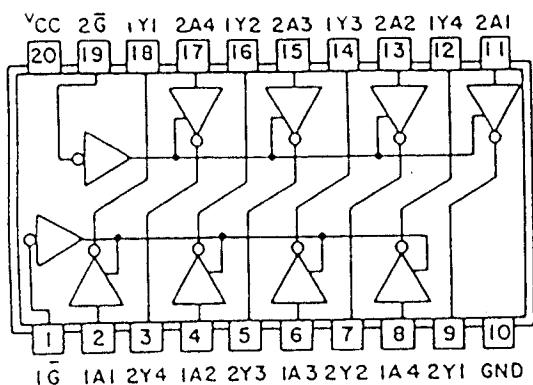
- a. Burn-in test (method 1015 of MIL-STD-883).
 - 1. Test condition D using the circuit shown on figure 3, or equivalent.
 - 2. $T_A = +125^\circ\text{C}$ minimum.
- b. Interim and final electrical test parameters shall be as specified in table II, except interim electrical parameters test prior to burn-in is optional at the discretion of the manufacturer.
- c. The percent defective allowable (PDA) shall be as specified in MIL-M-38510.

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, 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).

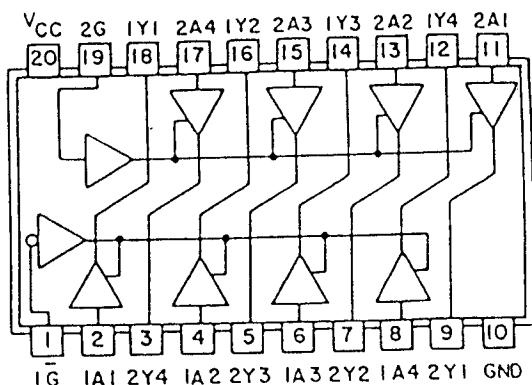
Device type 01

Cases R and S



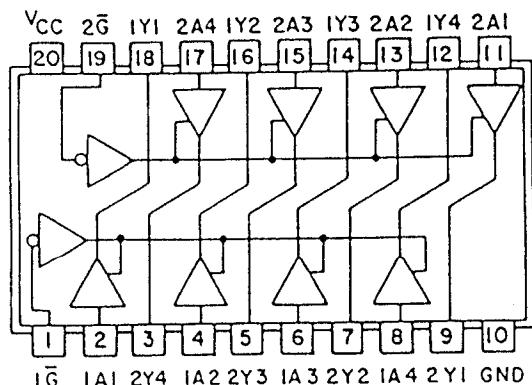
Device type 02

Cases R and S



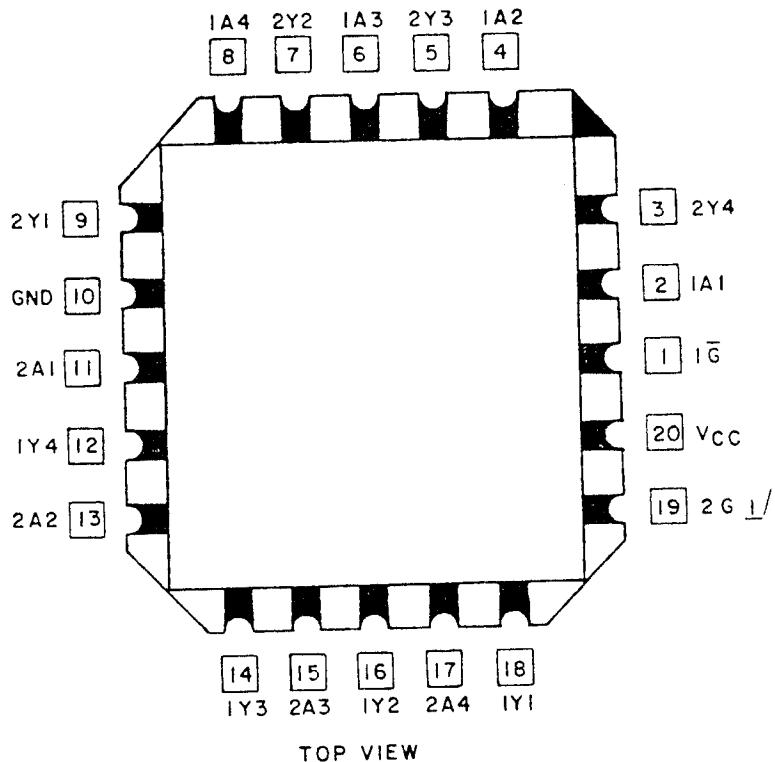
Device type 03

Cases R and S

FIGURE 1. Logic diagrams and terminal connections.

Device types 01, 02, and 03

Cases 2 and X



1/ For 01 and 03 pin 19 = 2G

FIGURE 1. Logic diagrams and terminal connections - Continued.

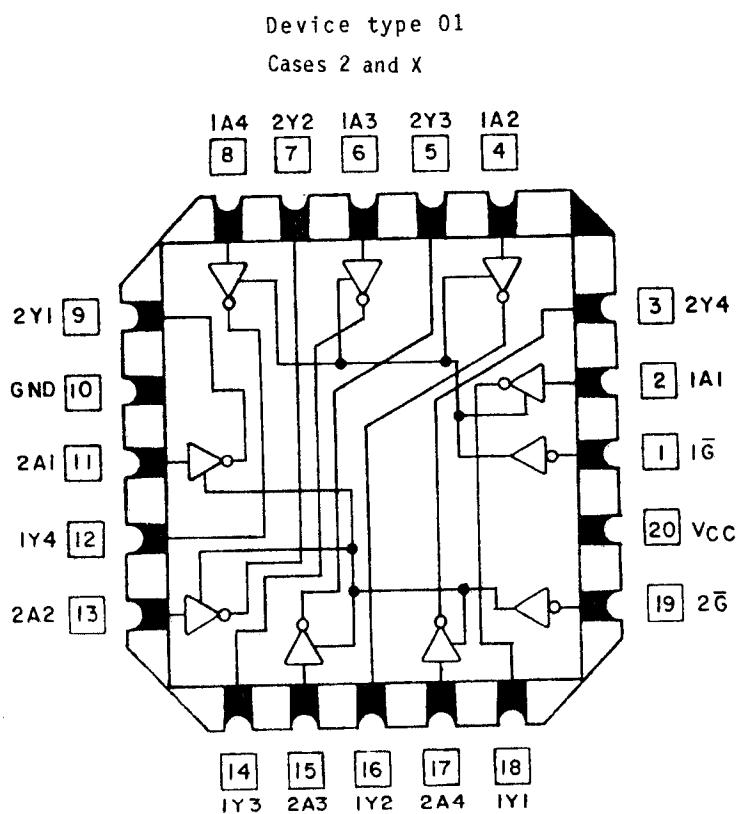
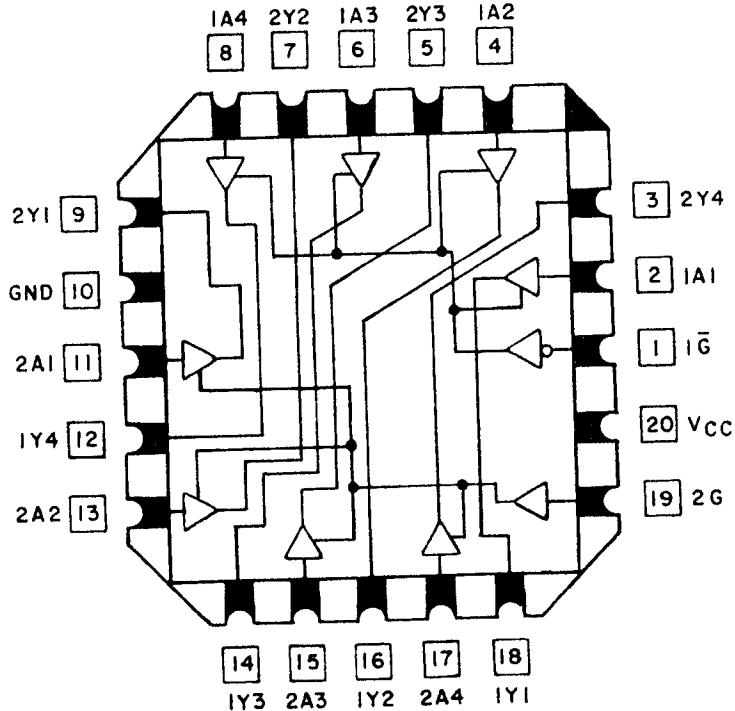


FIGURE 1. Logic diagrams and terminal connections - Continued.

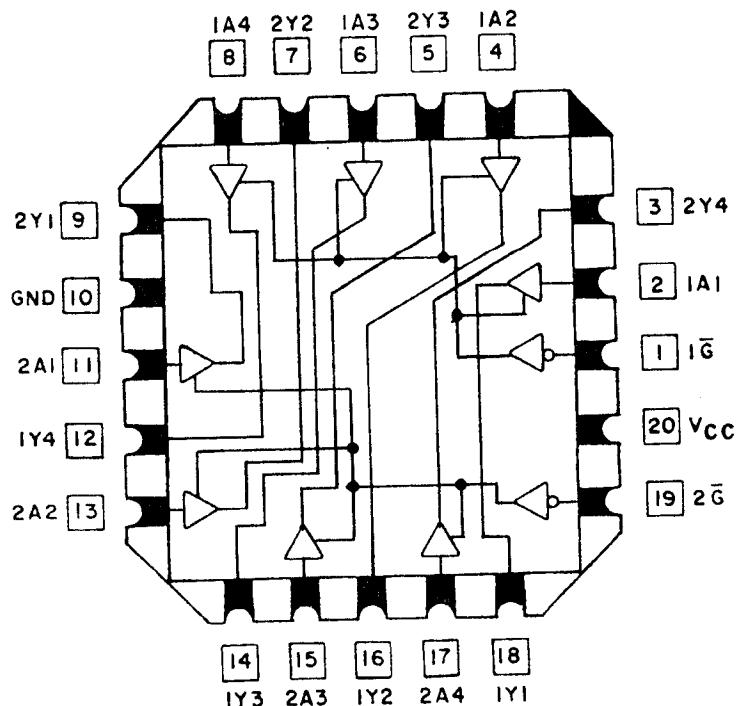
Device type 02

Cases 2 and X



Device type 03

Cases 2 and X

FIGURE 1. Logic diagrams and terminal connections - Continued.

Device type 01

Inputs		Out
\bar{G}	A	Y
L	H	L
L	L	H
H	X	Z

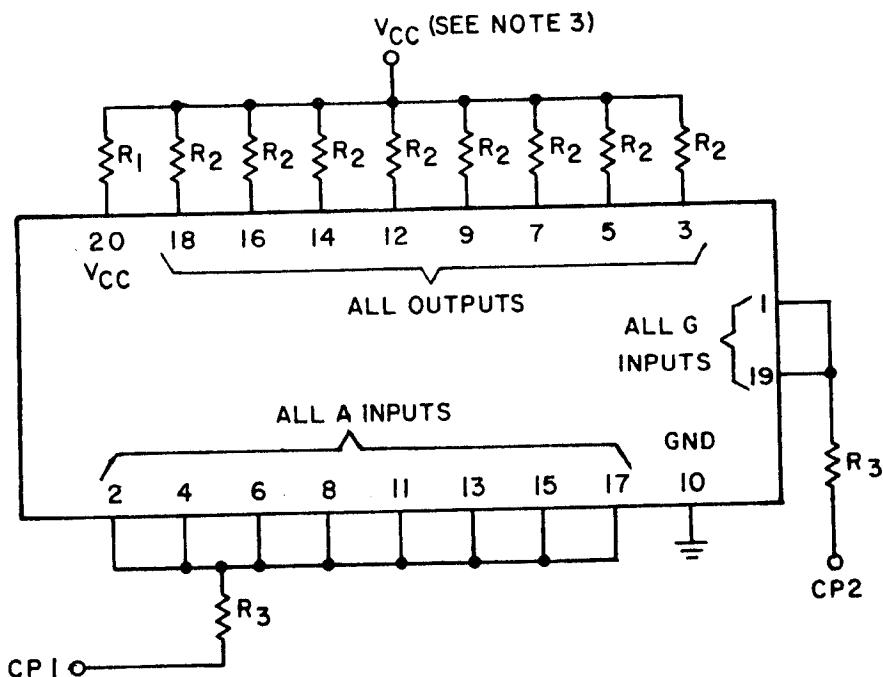
Device type 02

Inputs				Outputs	
1 \bar{G}	2G	1A	2A	1Y	2Y
L	H	H	H	H	H
L	H	L	L	L	L
H	L	X	X	Z	Z

Device type 03

Inputs		Out
\bar{G}	A	Y
L	L	L
L	H	H
H	X	Z

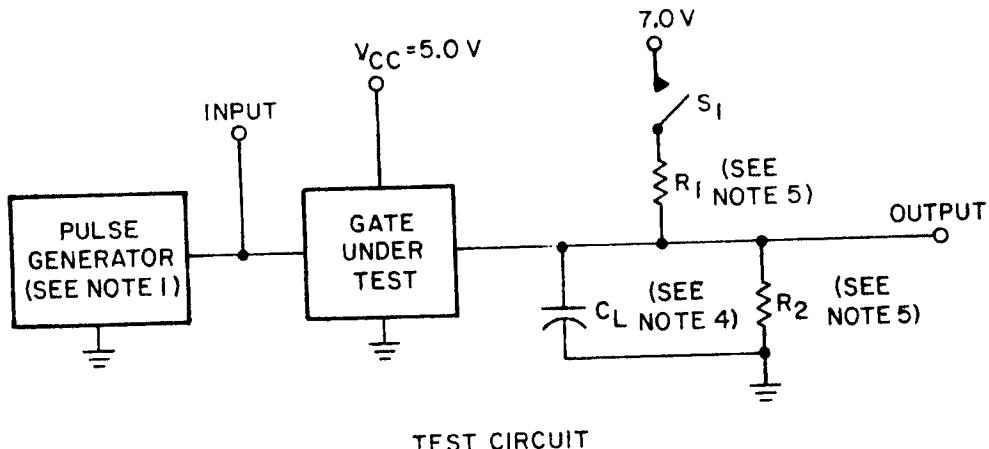
FIGURE 2. Truth tables.



NOTES:

1. CP1 = 100 kHz \pm 50% square wave; duty cycle = 50 \pm 15%, VIL = -0.5 V minimum to +0.8 V maximum; VIH = 2.0 V minimum to 5.5 V maximum.
2. CP2 = 50 kHz \pm 50% square wave, otherwise as described in note 1 above.
3. R1 = 10 Ω maximum; R2 = 470 Ω \pm 5%; R3 = 27 Ω maximum.
4. VCC shall be high enough to insure 5.0 V minimum is present at device VCC terminal.

FIGURE 3. Burn-in and life-test circuit for device types 01, 02 and 03.



NOTES:

1. All input pulses are supplied by generators having the following characteristics: $t_1 = t_0 = 6 \pm 1.5$ ns, PRR ≤ 1 MHz, $Z_{OUT} \approx 50 \Omega$.
2. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control.
3. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
4. In the examples above, the phase relationships between inputs and outputs have been chosen arbitrarily.
5. $C_L = 50 \text{ pF} \pm 10\%$, including scope probe, wiring and stray capacitance without package in test fixture.
6. $R_1 = R_2 = 499 \Omega \pm 1\%$.
7. Voltage measurements are made with respect to network ground terminal.

FIGURE 4. Switching time test circuit for all device types.

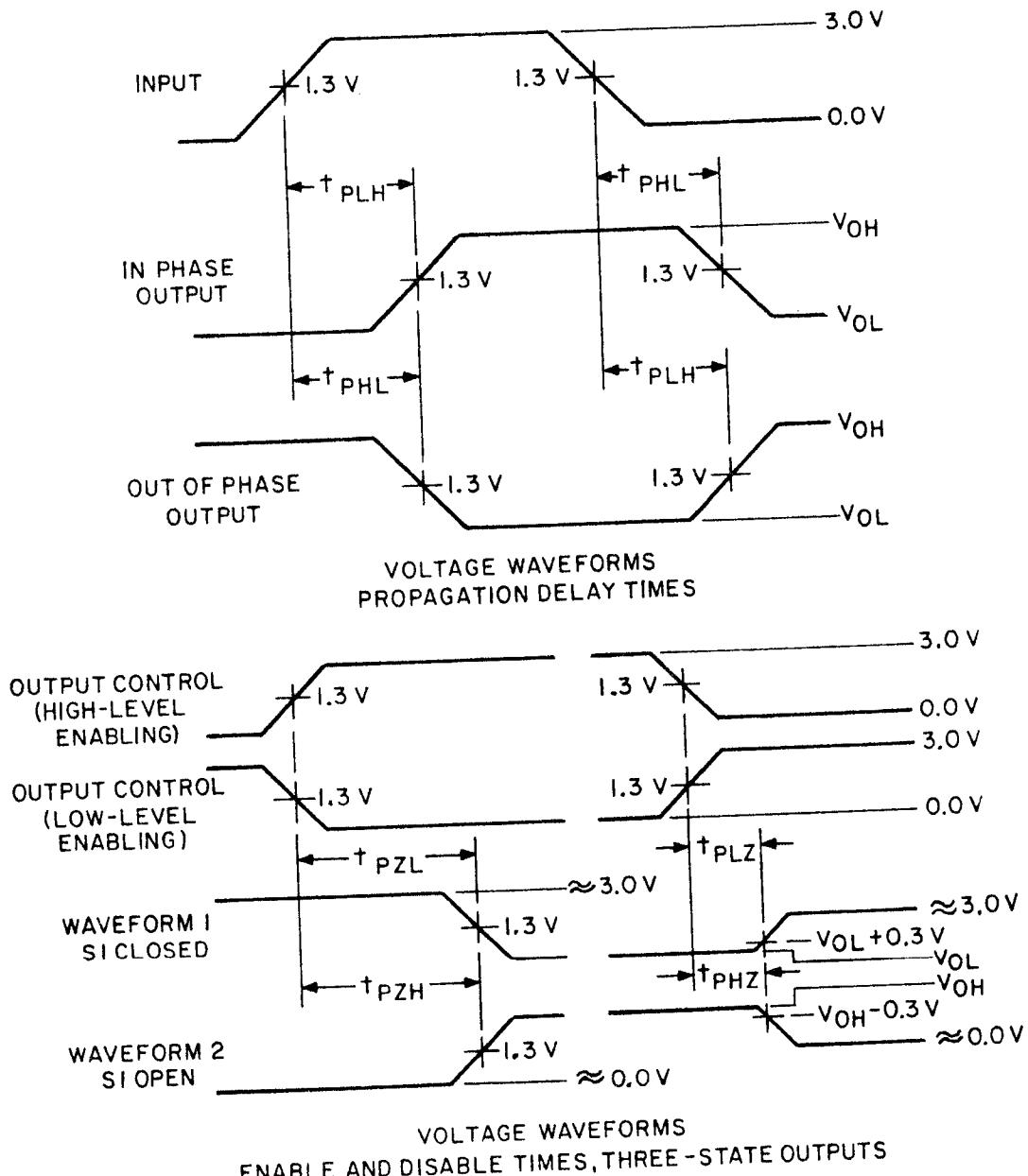


FIGURE 4. Switching time test circuit for all device types - Continued.

TABLE III. Group A inspection for device type 01.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Case no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal unit	
			Test	16	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y4	2A2	1Y3	2A3	1Y2	2A4	1Y1	2S5	VCC	Min Max	
$T_C = 25^\circ C$	V_{011}	3006	1	0.8 V	-3 mA	-3 mA	-3 mA	-3 mA	4.5 V	1Y1 2.4 V															
		"	2	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y2	
		"	3	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y3	
		"	4	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y4	
		"	5	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y1	
		"	6	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y2	
		"	7	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y3	
		"	8	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y4	
	V_{012}	"	9	0.8 V	-12 mA	-12 mA	-12 mA	-12 mA	1.2 mA	1Y1 2.0 V															
		"	10	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y2	
		"	11	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y3	
		"	12	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y4	
		"	13	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y1	
		"	14	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y2	
		"	15	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y3	
		"	16	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y4	
V_{021}	V_{021}	3007	17	0.8 V	2.0 V	12 mA	12 mA	12 mA	12 mA	1.2 mA	1Y1 0.4 V														
		"	18	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y2	
		"	19	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y3	
		"	20	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y4	
		"	21	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y1	
		"	22	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y2	
		"	23	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y3	
		"	24	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y4	
	V_{022}	"	25	0.8 V	2.0 V	18 mA	18 mA	18 mA	18 mA	1.8 mA	1Y1 0.45 V														
		"	26	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y2	
		"	27	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y3	
		"	28	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y4	
		"	29	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y1	
		"	30	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y2	
		"	31	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y3	
		"	32	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y4	
I_{02L}	I_{02L}	33	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	1Y1 -20 uA	
		"	34	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y2	
		"	35	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y3	
		"	36	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y4	
		"	37	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y1	
		"	38	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y2	
		"	39	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y3	
		"	40	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y4	
	I_{11L}	41	2.0 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	1G 1/1 V	
		"	42	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A1 1/1 V	
		"	43	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A2 1/1 V	
		"	44	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A3 1/1 V	
		"	45	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A1 1/1 V	
		"	46	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A2 1/1 V	
		"	47	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A3 1/1 V	
		"	48	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A4 1/1 V	
	I_{11H}	3009	49	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	1G 1/1 V															
		"	50	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A1 1/1 V	
		"	51	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A2 1/1 V	
		"	52	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A3 1/1 V	
		"	53	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A1 1/1 V	
		"	54	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A2 1/1 V	
		"	55	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A3 1/1 V	
		"	56	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A4 1/1 V	
		"	57	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2G 1/1 V	

See footnotes at end of table.

TABLE III. Group A inspection for device type 01 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method test	Case no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits	Unit	
1 $T_C = 25^\circ C$	I _{H1}	3010	59	2.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	15.5 V	16	20 μA	
		"	60	2.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A1	"	"	
		"	61	2.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A2	"	"	
		"	62	2.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A3	"	"	
		"	63	2.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A4	"	"	
		"	64	2.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A1	"	"	
		"	65	2.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A2	"	"	
		"	66	2.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A3	"	"	
		"	67	2.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A4	"	"	
		"	68	2.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2S	"	"	
	I _{H2}	"	69	7.0 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	100	"	"	
		"	70	7.0 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1G	"	"	
		"	71	7.0 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A1	"	"	
		"	72	7.0 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A2	"	"	
		"	73	7.0 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A3	"	"	
		"	74	7.0 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A4	"	"	
		"	75	7.0 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A1	"	"	
		"	76	7.0 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A2	"	"	
		"	77	7.0 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A3	"	"	
		"	78	7.0 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A4	"	"	
	I _{O2} /	"	3011	79	GND	37	37	mA																			
		"	80	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	-30	-30	mA	
		"	81	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y1	"	"	
		"	82	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y2	"	"	
		"	83	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y3	"	"	
		"	84	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Y4	"	"	
		"	85	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y1	"	"	
		"	86	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y2	"	"	
	I _{CCH}	"	3005	87	GND	10	10	V																			
		"	88	5.5 V	VCC	VCC	VCC																				
	I _{CCZ}	"	89	5.5 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	25	25	V
	V _{IC}	"	90	-18 mA	1G	-1.5	V																				
		"	91	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A1	"	"	
		"	92	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A2	"	"	
		"	93	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A3	"	"	
		"	94	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A1	"	"	
		"	95	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A2	"	"	
		"	96	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A3	"	"	
		"	97	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A4	"	"	
		"	98	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2G	"	"	
		"	99	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"

² Same tests, terminal conditions and limits as subgroup 1 except $T_C = +125^\circ C$ and $V_{IL} = +0.7$ V.

³ $T_C = +125^\circ C$

⁴ Same tests, terminal conditions and limits as subgroup 1 except $T_C = -55^\circ C$ and V_{IC} tests are omitted.

⁵ Same tests and terminal conditions as subgroup 7 except $T_C = +125^\circ C$ and $T_C = -55^\circ C$.

See footnotes at end of table.

TABLE III. Group A inspection for device type O1 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method no.	Case, X ₂	R.S., 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal unit			
					Test	1G	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y4	2A2	1Y3	2A3	1Y2	2A4	1Y1	2G	V _{CC}	Min	Max
$T_C = 25^\circ C$	tp _{H1}	3003	102	GND	IN	IN	IN	IN	IN	OUT	OUT	OUT	OUT	OUT	GND	OUT	OUT	OUT									
		See fig 6	103	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
		104	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		105	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		106	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		107	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		108	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		109	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		110	GND	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT	OUT	OUT	OUT	GND	OUT	OUT	OUT								
		111	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
tp _{L1}	tp _L	112	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		113	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		114	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		115	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		116	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		117	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		118	IN	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	OUT	OUT	OUT	OUT	OUT	OUT	GND	OUT	OUT	OUT							
		119	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		120	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		121	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
tp _{ZH}	tp _Z	122	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		123	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		124	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		125	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		126	IN	GND	GND	GND	GND	GND	GND	GND	OUT	OUT	OUT	OUT	OUT	GND	GND	GND									
		127	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		128	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		129	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		130	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		131	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
tp _{HZ}	tp _{ZL}	132	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		133	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		134	IN	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	OUT	OUT	OUT	OUT	OUT	GND	OUT	OUT	OUT								
		135	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		136	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		137	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		138	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		139	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		140	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		141	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
tp _{HZ}	tp _H	142	IN	GND	GND	GND	GND	GND	GND	GND	OUT	OUT	OUT	OUT	OUT	GND	GND	GND									
		143	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		144	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		145	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		146	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		147	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		148	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		149	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	

See footnotes at end of table.

TABLE III. Group A inspection for device type 01 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Case no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits unit
		test no.	1G	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y4	2A2	1Y3	2A3	1Y2	2A4	1Y1	2G	VCC	Min	Max	
10	$T_C = 125^\circ C$	tpHL1 tpHL1 tpZL tpZH tpLZ tpHZ																					3	12	ns
																							2	11	ns
11	$T_C = -55^\circ C$																						5	20	ns
																							5	15	ns
																							3	18	ns
																							2	12	ns

1/ I_{IL} Same tests, terminal conditions and limits as subgroup 10 except $T_C = +125^\circ C$.

1/ I_{IL} limits shall be as follows:

Symbol	Min/max limits (μA) for circuit		
	A	B	C
I_{IL}	0/-100	0/-100	0/-100

2/ Method 3011 shall be used, except the output voltage shall be as specified herein, and the output current shall be operating rather than short circuit current. The output conditions have been chosen to produce a current that closely approximates one half of the true short circuit output current I_{OS} .

3/ I_0 limits for circuit C shall be -30 to -110 mA.

4/ $A \geq 2.0$ V and $B \leq 0.8$ V.

5/ Output voltages shall be either:

- a. $H = 2.4$ V minimum and $L = 0.4$ V maximum when using a high speed checker double comparator, or
- b. $H \geq 1.5$ V and $L \leq 1.5$ V when using a high speed checker single comparator.

TABLE III. Group A inspection for device types 02 and 03. $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, or open).
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Subgroup	Symbol	Case no.	R _S	Measured test limits												Unit								
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1 $T_{C} = 25^{\circ}\text{C}$	V_{011}	3007	1 0.8 V	2.0 V	12.0 V	2.0 V	2.0 V	-3 mA	4.5 V	IV1	2.4 V	IV2	IV3	IV4										
		10	2 **	*	12.0 V	2.0 V	2.0 V	-3 mA	IV1	IV2	IV3	IV4	IV5	IV6										
		11	3 **	4 **	5 **	6 **	7 **	8 **	9 **	10 **	11 **	12 **	13 **	14 **	15 **	16 **	17 **	IV1	IV2	IV3	IV4	IV5	IV6	
	V_{012}	10	0.8 V	2.0 V	12.0 V	2.0 V	2.0 V	-3 mA	IV1	IV2	IV3	IV4	IV5	IV6										
		11	11 **	12 **	13 **	14 **	15 **	16 **	17 **	18 **	19 **	20 **	21 **	22 **	23 **	24 **	25 **	IV1	IV2	IV3	IV4	IV5	IV6	
	V_{013}	17	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	IV1	IV2	IV3	IV4	IV5	IV6	
		18	19 **	20 **	21 **	22 **	23 **	24 **	25 **	26 **	27 **	28 **	29 **	30 **	31 **	32 **	33 **	IV1	IV2	IV3	IV4	IV5	IV6	
	V_{014}	25	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	IV1	IV2	IV3	IV4	IV5	IV6	
		26	27 **	28 **	29 **	30 **	31 **	32 **	33 **	34 **	35 **	36 **	37 **	38 **	39 **	40 **	41 **	IV1	IV2	IV3	IV4	IV5	IV6	
	I_{02H}	33	2.0 V	12.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	IV1	IV2	IV3	IV4	IV5	IV6	
		34	35 **	36 **	37 **	38 **	39 **	40 **	41 **	42 **	43 **	44 **	45 **	46 **	47 **	48 **	49 **	IV1	IV2	IV3	IV4	IV5	IV6	
	I_{02L}	41	2.0 V	12.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	IV1	IV2	IV3	IV4	IV5	IV6	
		42	43 **	44 **	45 **	46 **	47 **	48 **	49 **	50 **	51 **	52 **	53 **	54 **	55 **	56 **	57 **	58 **	IV1	IV2	IV3	IV4	IV5	IV6
	I_{11L}	3009	49 **	50 **	51 **	52 **	53 **	54 **	55 **	56 **	57 **	58 **	59 **	60 **	61 **	62 **	63 **	64 **	65 **	66 **	67 **	68 **	69 **	

TABLE III. Group A inspection for devices types 02 and 03 1/ - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

		terminal connections (pin numbers)		terminal conditions (pin numbers)		Measured Test limits																					
Subgroup	Symbol	MIL-STD-883 method	Case no.	R.S., Test	X2, 16	4, 1A1	5, 2A1	6, 2A2	7, 2A3	8, 2A4	9, 2A5	10, 2A6	11, 2A7	12, 2A8	13, 2A9	14, 2A10	15, 2A11	16, 2A12	17, 2A13	18, 2A14	19, 2A15	20, 2A16	terminal	Min	Max	Unit	
$T_C = 25^\circ\text{C}$	I _H	1	3010	59	2.7 V	60	2.7 V	61	2.7 V	62	2.7 V	63	2.7 V	64	2.7 V	65	2.7 V	66	2.7 V	67	2.7 V	68	GND	5.5 V	15 mA	20 μA	
	I _H	2	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A1	1A2	1A3	1A4
	I _H	3	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A1	2A2	2A3	2A4
	I _H	4	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A5	2A6	2A7	2A8
	I _H	5	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1A5	1A6	1A7	1A8
	I _H	6	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A9	2A10	2A11	2A12
	I _H	7	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2A13	2A14	2A15	2A16
	I _H	8	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2B1	2B2	2B3	2B4
	I _H	9	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2C1	2C2	2C3	2C4
	I _H	10	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2D1	2D2	2D3	2D4
	I _H	11	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2E1	2E2	2E3	2E4
	I _H	12	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2F1	2F2	2F3	2F4
	I _H	13	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2G1	2G2	2G3	2G4
	I _H	14	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2H1	2H2	2H3	2H4
	I _H	15	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2I1	2I2	2I3	2I4
	I _H	16	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2J1	2J2	2J3	2J4
	I _H	17	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2K1	2K2	2K3	2K4
	I _H	18	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2L1	2L2	2L3	2L4
	I _H	19	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2M1	2M2	2M3	2M4
	I _H	20	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2N1	2N2	2N3	2N4
	I _H	21	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2O1	2O2	2O3	2O4
	I _H	22	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2P1	2P2	2P3	2P4
	I _H	23	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q1	2Q2	2Q3	2Q4
	I _H	24	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2R1	2R2	2R3	2R4
	I _H	25	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2S1	2S2	2S3	2S4
	I _H	26	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2T1	2T2	2T3	2T4
	I _H	27	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2U1	2U2	2U3	2U4
	I _H	28	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2V1	2V2	2V3	2V4
	I _H	29	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2W1	2W2	2W3	2W4
	I _H	30	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2X1	2X2	2X3	2X4
	I _H	31	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Y1	2Y2	2Y3	2Y4
	I _H	32	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Z1	2Z2	2Z3	2Z4
	I _H	33	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3A1	3A2	3A3	3A4
	I _H	34	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3B1	3B2	3B3	3B4
	I _H	35	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3C1	3C2	3C3	3C4
	I _H	36	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3D1	3D2	3D3	3D4
	I _H	37	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3E1	3E2	3E3	3E4
	I _H	38	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3F1	3F2	3F3	3F4
	I _H	39	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3G1	3G2	3G3	3G4
	I _H	40	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3H1	3H2	3H3	3H4
	I _H	41	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3I1	3I2	3I3	3I4
	I _H	42	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3J1	3J2	3J3	3J4
	I _H	43	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3K1	3K2	3K3	3K4
	I _H	44	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3L1	3L2	3L3	3L4
	I _H	45	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3M1	3M2	3M3	3M4
	I _H	46	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3N1	3N2	3N3	3N4
	I _H	47	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3O1	3O2	3O3	3O4
	I _H	48	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3P1	3P2	3P3	3P4
	I _H	49	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3Q1	3Q2	3Q3	3Q4
	I _H	50	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3R1	3R2	3R3	3R4
	I _H	51	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3S1	3S2	3S3	3S4
	I _H	52	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3T1	3T2	3T3	3T4
	I _H	53	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3U1	3U2	3U3	3U4
	I _H	54	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3V1	3V2	3V3	3V4
	I _H	55	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3W1	3W2	3W3	3W4
	I _H	56	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3X1	3X2	3X3	3X4
	I _H	57	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3Y1	3Y2	3Y3	3Y4
	I _H	58	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3Z1	3Z2	3Z3	3Z4
	I _H	59	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	4A1	4A2	4A3	4A4
	I _H	60	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	4B1	4B2	4B3	4B4
	I _H	61	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	4C1	4C2	4C3	4C4
	I _H	62	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	4D1	4D2	4D3	4D4
	I _H	63	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	4E1	4E2	4E3	4E4
	I _H	64	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	4F1	4F2	4F3	4F4
	I _H	65	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	4G1	4G2	4G3	4G4
	I _H	66	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	4H1	4H2	4H3	4H4
	I _H	67	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	4I1	4I2	4I3	4I4
	I _H	68	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	4J1	4J2	4J3	4J4
	I _H	69	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	4K1	4K2	4K3	4K4
	I _H	70	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	4L1	4L2	4L3	4L4
	I _H	71																									

11

Statistical analyses + nominal conditions and limits as subgroup 1 except $T_C = -55^\circ\text{C}$ and VIC tests are omitted.

THE JOURNAL OF CLIMATE

2

See footnotes at end of table.

TABLE III. Group A inspection for device types 02 and 03 1/- Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Sub-group	Symbol	MIL-STD-883 R,S, X,2	Case no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured Test limits	Unit
$T_C = 25^\circ C$	$t_{P_{H1}}$	3003 See Fig. 6	102 GND IN	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	ns	
		104	105	106	107	108	109																		
	$t_{P_{H1}}$		110 GND IN	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
			111	112	113	114	115	116	117																
	$t_{P_{H1}}$		118 IN GND	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
			119	120	121	122	123	124	125																
	$t_{P_{H1}}$		126 IN 4.5 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
			127	128	129	130	131	132	133																
	$t_{P_{H1}}$		134 IN GND	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
			135	136	137	138	139	140	141																
	$t_{P_{H1}}$		142 IN 4.5 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
			143	144	145	146	147	148	149																

See footnotes at end of table.

TABLE III. Group A inspection for device types 02 and 03 1/- Continued.
Terminal conditions (pins not designated may be high $\geq 2.0\text{ V}$, low $\leq 0.8\text{ V}$, or open).

Subgroup	Symbol	MIL-STD-883 method	Case X 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured Test limits	Unit	
		Test no.	IG	YR1	2Y4	IA2	2Y3	IA3	2Y2	IA4	2Y1	IA5	GND	2A4	YV1	YV2	2A3	YV3	2A2	YV4	2A1	YV5	VCC	Min	Max	
10	tpLH1																							3	16/ ns	
$T_C = 125^\circ\text{C}$	tpHL1																							7	13/ ns	
	tpZL																							7	25/ ns	
	tpZH																							7	25/ ns	
	tpLZ																							3	17/ ns	
	tpHZ																							2	12/ μs	
11			Same tests and terminal conditions as subgroup 9 except $T_C = 125^\circ\text{C}$.																							
$T_C = -55^\circ\text{C}$			Same tests, terminal conditions and limits as subgroup 10 except $T_C = -55^\circ\text{C}$.																							

- 1/ For type 02 - pin 19 is 26.
for type 03 - pin 19 is 25.
- 2/ Apply 2.0 V for type 02; apply 0.8 V for type 03.
- 3/ Apply 0.5 V for type 02; apply 2.0 V for type 03.
- 4/ TTL limits shall be as follows:

Symbol	Min/Max limits (μA) for circuit:		
	A	B	C
TTL	0/-100	0/-100	0/-100

5/ Method 3011 shall be used, except the output voltage shall be as specified herein, and the output current shall be operating rather than short circuit current. The output conditions have been chosen to produce a current that closely approximates one half of the true short circuit output current I_{OS} .

- 6/ 10 Limit for circuit C shall be -30 to -110 mA.
- 7/ Apply 5.5 V for type 02; apply GND for type 03.
- 8/ Apply GND for type 02; apply 5.5 V for type 03.

Symbol	H	L	Z
	02	17	32
03	15	24	27

- 10/ A $\geq 2.0\text{ V}$ and B $\leq 0.8\text{ V}$.
- 11/ Apply A for type 02; apply B for type 03.

- 12/ Output voltages shall be either:

- a. H = 2.4 V minimum and L = 0.4 V maximum when using a high speed checker double comparator, or
- b. H $\geq 1.5\text{ V}$ and L $\leq 1.5\text{ V}$ when using a high speed checker single comparator.
- 13/ 11 ns for device type 02 and 10 ns for device type 03.
- 14/ 21 ns for device type 02 and 20 ns for device type 03.
- 15/ 15 ns for device type 02 and 13 ns for device type 03.
- 16/ 14 ns for device type 02 and 13 ns for device type 03.
- 17/ Max limit shall be 20 ns for type 02 and 18 ns for type 03.

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 as specified in table II herein.
- b. Subgroups 4, 5, 6 of table I of method 5005 of MIL-STD-883 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 parameters 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 parameters shall be as specified in table II herein.
- b. Steady-state life test (method 1005 of MIL-STD-883) conditions, or equivalent:
 1. Test condition D using the circuit shown on figure 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.

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

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

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 applications and logistics 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. Requirement for certificate of compliance, if applicable.
- d. Requirements for notification of change of product or process to contracting activity in addition to notification to the qualifying activity, if applicable.
- e. Requirements for failure and analysis (including required test condition of MIL-STD-883, method 5003), 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. Unless otherwise specified, these requirements will not apply to direct purchase by or direct shipment to the Government.

h. Requirement for JAN marking.

6.3 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)
V _{IN} - - - - -	Voltage level at an input terminal
I _{IN} - - - - -	Current flowing into an input terminal
t _{PHZ} - - - - -	Output disable time from high level - The time between the specified reference points on the input and output voltage waveforms with the three-state output changing from the defined high level to a high-impedance (off) state.
t _{PLZ} - - - - -	Output disable time from low level - The time between the specified reference points on the input and output voltage waveforms with the three-state output changing from the defined low level to a high-impedance (off) state.
t _{PZH} - - - - -	Output enable time to high level - The time between the specified reference points on the input and output voltage waveforms with the three-state output changing from a high-impedance (off) state to the defined high level.
t _{PZL} - - - - -	Output enable time to low level - The time between the specified reference points on the input and output voltage waveforms with the three-state output changing from a high-impedance (off) state to the defined low level.
I _{OZL} - - - - -	Output current in the high-impedance mode with the output voltage low.
I _{OZH} - - - - -	Output current in the high-impedance mode with the output voltage high.

6.4 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.

6.5 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.

Military device type	Generic-industry type
01	54ALS240
02	54ALS241
03	54ALS244

6.6 Manufacturer's designation. Manufacturer's circuits which form a part of this specification are designated with an "X" as shown in table IV herein.

TABLE IV. Manufacturer's designation.

Device type	Circuits		
	A	B	C
	Texas Instrument	Motorola	National
01	X		
02	X		
03	X		

Custodians:

Army - ER
Navy - EC
Air Force - 17

Preparing activity:

Air Force - 17

Review activities:

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

Agent:
DLA - ES

(Project 5962-1102)

User activities:

Army - SM
Navy - AS, CG, MC