MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, BIPOLAR, TTL, MAGNITUDE COMPARATORS, 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 Advanced Low Power Schottky TTL, magnitude comparator microcircuits. Two product assurance classes and a choice of case outlines and lead finishes are provided and are reflected in the complete part number.

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

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

Device type	Circuit
01	4-Bit Comparator
02	4-Bit Comparator

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:

Outline letter	Case outline (see MIL-M-38510, appendix C)
E	D-2 (16-pin, 1/4" x 7/8"), dual-in-line package
F	F-5 (16-pin, 1/4" x 3/8"), flat 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 -12 mA to +5.5 V dc
Storage temperature range	-65°C to +150°C
Maximum power dissipation (P_D) per device 1/:	
Device 01 and 02	485 mW
Lead temperature (soldering 10 seconds)	+300°C
Thermal resistance, junction to case (θ_{JC}):	
Cases E and F	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., I_{OS}).

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 (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.

1.4 Recommended operating conditions.

Supply voltage(V_{CC})	4.5 V dc minimum to 5.5 V dc maximum
Minimum high-level input voltage (V_{IH})	2.0 V dc
Maximum low-level input voltage (V_{IL})	0.8 V dc
Normalized fanout (each output)	10 maximum
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 manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

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

3. REQUIREMENTS

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

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

3.2.1 Terminal connections. The 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 Logic diagrams. The logic diagrams shall be as specified on figure 3.

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

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

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

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

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions $-55°C \le T_C \le +125°C$	Device type	Limits Min	Limits Max	Unit
High-level output voltage	V_{OH}	V_{CC} = 4.5 V, V_{IH} = 2.0 V, V_{IL} = 0.8 V, I_{OH} = -400 µA	01	2.4		V
		V_{CC} = 4.5 V, V_{IH} = 2.0 V, V_{IL} = 0.8 V, I_{OH} = -800 µA	02			
Low-level output voltage	V_{OL}	V_{CC} = 4.5 V, V_{IH} = 2.0 V, V_{IL} = 0.8 V, I_{OL} = 16 mA	All		0.4	V
Input clamp voltage	V_{IC}	V_{CC} = 4.5 V, I_{IN} = -12 mA, T_C = 25°C	All		-1.5	V
High-level input current (All inputs except A < B or A > B)	I_{IH1}	V_{CC} = 5.5 V, V_{IN} = 2.4 V	01	0	120	µA
			02	0	80	µA
High-level input current (all inputs)	I_{IH2}	V_{CC} = 5.5 V, V_{IN} = 5.5 V	01	0	300	µA
			02	0	200	µA
High-level input current (A < B, A > B inputs)	I_{IH3}	V_{CC} = 5.5 V, V_{IN} = 2.4 V	01	0	40	µA
Low-level input current (all other inputs)	I_{IL1}	V_{CC} = 5.5 V, V_{IN} = 0.4 V	01	-2.0	-4.3	mA
			02	-1.4	-3.2	mA
Low-level input current (A < B, A > B inputs)	I_{IL2}	V_{CC} = 5.5 V, V_{IN} = 0.4 V	01	-0.7	-1.6	mA
Short circuit output current	I_{OS}	V_{CC} = 5.5 V 1/	01	-20	-55	mA
		V_{CC} = 5.5 V 1/	02	-20	-70	mA
Supply current	I_{CC}	V_{CC} = 5.5 V 2/	01		88	mA
		V_{CC} = 5.5 V	02		81	mA
Propagation delay from any A or B input to A < B or A > B outputs	t_{PLH1}	C_L = 50 pF 3 gate levels 3/ 4/ R_L = 400Ω	01	2	38	ns
Propagation delay from any A or B input to A > B output	t_{PLH2}	C_L = 50 pF 3 gate levels 3/ 4/ R_L = 400Ω	01	2	49	ns

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $-55°C \le T_C \le +125°C$	Device type	Limits		Unit
				Min	Max	
Propagation delay from A < B or A = B input to A > B output	t_{PLH3}	C_L = 50 pF 2 gate levels 3/ 4/ R_L = 400Ω	01	2	19	ns
Propagation delay from A = B input to A = B output	t_{PLH4}	C_L = 50 pF 1 gate level 3/ 4/ R_L = 400Ω	01	2	30	ns
Propagation delay from A > B or A = B input to A < B output	t_{PLH5}	C_L = 50 pF 2 gate levels 3/ 4/ R_L = 400Ω	01	2	19	ns
Propagation delay from any A or B input to A > B or A < B output	t_{PHL1}	C_L = 50 pF 3 gate levels 3/ 4/ R_L = 400Ω	01	2	43	ns
Propagation delay from any A or B input to A = B output	t_{PHL2}	C_L = 50 pF 3 gate levels 3/ 4/ R_L = 400Ω	01	2	43	ns
Propagation delay from A < B or A = B inputs to A > B output	t_{PHL3}	C_L = 50 pF 2 gate levels 3/ 4/ R_L = 400Ω	01	2	26	ns
Propagation delay from A = B input to A = B output	t_{PHL4}	C_L = 50 pF 1 gate levels 3/ 4/ R_L = 400Ω	01	2	26	ns
Propagation delay from A > B or A = B input to A < B output	t_{PHL5}	C_L = 50 pF 2 gate levels 3/ 4/ R_L = 400Ω	01	2	26	ns
Propagation delay from E to A = B	t_{PLH1}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	3	22	ns
Propagation delay from E to A < B	t_{PLH2}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	3	25	ns
Propagation delay from E to A > B	t_{PLH3}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	3	25	ns
Propagation delay from A to A = B	t_{PLH4}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	9	55	ns
Propagation delay from B to A = B	t_{PLH5}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	9	55	ns

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $-55°C \leq T_C \leq +125°C$	Device type	Limits		Unit
				Min	Max	
Propagation delay from A to A < B	t_{PLH6}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	6	39	ns
Propagation delay from B to A < B	t_{PLH7}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	3	30	ns
Propagation delay from A to A > B	t_{PLH8}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	3	30	ns
Propagation delay from B to A > B	t_{PLH9}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	6	39	ns
Propagation delay from E to A = B	t_{PHL1}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	3	19	ns
Propagation delay from E to A < B	t_{PHL2}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	3	21	ns
Propagation delay from E to A > B	t_{PHL3}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	3	21	ns
Propagation delay from A to A = B	t_{PHL4}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	9	55	ns
Propagation delay from B to A = B	t_{PHL5}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	9	55	ns
Propagation delay time from A to A < B	t_{PHL6}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	6	32	ns
Propagation delay time from B to A < B	t_{PHL7}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	3	26	ns
Propagation delay time from A to A > B	t_{PHL8}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	3	25	ns
Propagation delay time from B to A > B	t_{PHL9}	V_{CC} = 5.0 V, R_L = 390Ω, C_L = 50 pF	02	6	35	ns

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

2/ I_{CC} is measured with outputs open, A = B grounded, and all other inputs at 4.5 V.

3/ The longest gate level propagation delay paths are not tested (5 gate levels); however, they can be calculated: $t = t_{p1}$ maximum + t_{p2} maximum - t_{p4} minimum.

4/ Gate level references are made with respect to the circuit logic diagram.

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.

TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (see table III)	
	Class S devices	Class B devices
Initial electrical parameters (pre burn-in) (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, 8,9,10,11	1,2,3,7, 9,10,11
Group B test requirements (method 5005) subgroup 5	1,2,3,7, 8,9,10,11	N/A
Group C end-point electrical parameters (method 5005)	N/A	1,2,3
Additional electrical subgroups for group C periodic inspections	N/A	None
Group D end-point electrical parameters (method 5005)	1,2,3	1,2,3

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

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 5 (see MIL-M-38510, appendix E).

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with MIL-M-38510 and methods 5005 and 5007, as applicable, of MIL-STD-883, except as modified herein.

4.2 Screening. Screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to qualification and quality conformance inspection. The following additional criteria shall apply:

a. Burn-in (method 1015 of MIL-STD-883).

(1) Test condition D or E, using the circuit shown on figure 4, or equivalent.

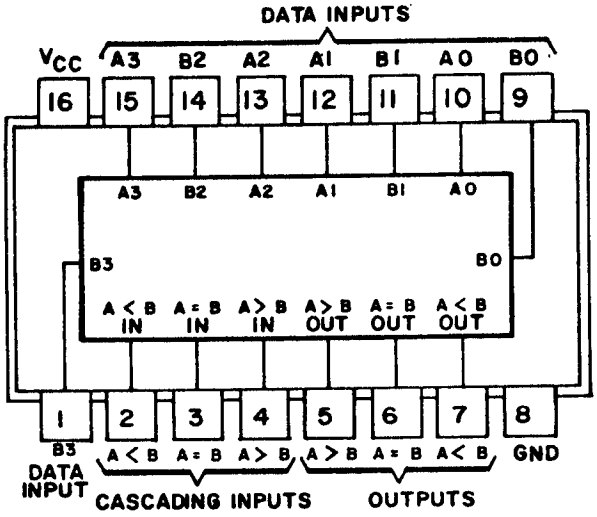
(2) T_A = +125°C minimum.

b. Initial and final electrical test parameters shall be as specified in table II, except initial electrical parameters tests prior to burn-in are optional at the discretion of the manufacturer.

c. The percent defective allowable (PDA) shall be as specified in MIL-M-38510.

Device type 01

Cases E and F



Device type 02

Cases E and F

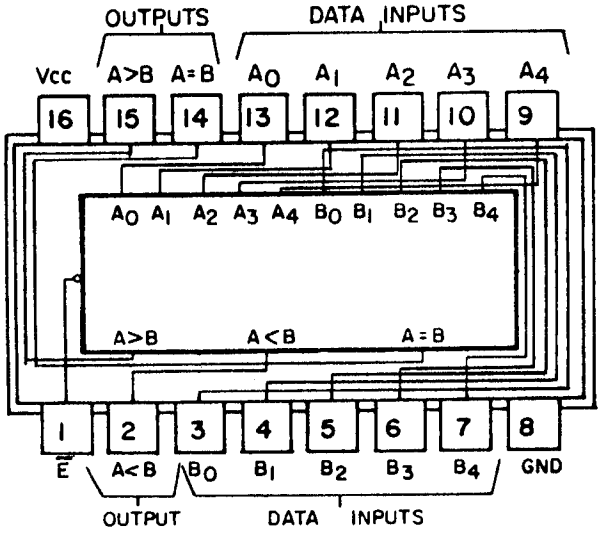


FIGURE 1. Terminal connections.

Device type 01

COMPARING INPUTS				CASCADING INPUTS			OUTPUTS		
A3, B3	A2, B2	A1, B1	A0, B0	A > B	A < B	A = B	A > B	A < B	A = B
A3 > B3	X	X	X	X	X	X	H	L	L
A3 < B3	X	X	X	X	X	X	L	H	L
A3 = B3	A2 > B2	X	X	X	X	X	H	L	L
A3 = B3	A2 < B2	X	X	X	X	X	L	H	L
A3 = B2	A2 = B2	A1 > B1	X	X	X	X	H	L	L
A3 = B3	A2 = B2	A1 < B1	X	X	X	X	L	H	L
A3 = B3	A2 = B2	A1 = B1	A0 > B0	X	X	X	H	L	L
A3 = B3	A2 = B2	A1 = B1	A0 < B0	X	X	X	L	H	L
A3 = B3	A2 = B2	A1 = B1	A0 = B0	H	L	L	H	L	L
A3 = B3	A2 = B2	A1 = B1	A0 = B0	L	H	L	L	H	L
A3 = B3	A2 = B2	A1 = B1	A0 = B0	L	L	H	L	L	H
A3 = B3	A2 = B2	A1 = B1	A0 = B0	X	X	H	L	L	H
A3 = B3	A2 = B2	A1 = B1	A0 = B0	H	H	L	L	L	L
A3 = B3	A2 = B2	A1 = B1	A0 = B0	L	L	L	H	H	L

Device type 02

$\overline{E}$	Ay	By	A < B	A > B	A = B
H	X	X	L	L	L
L	Word A =	Word B	L	L	H
L	Word A >	Word B	L	H	L
L	Word B >	Word A	H	L	L

H = High level
L = Low level
X = Irrelevant

FIGURE 2. Truth table.

Device type 01

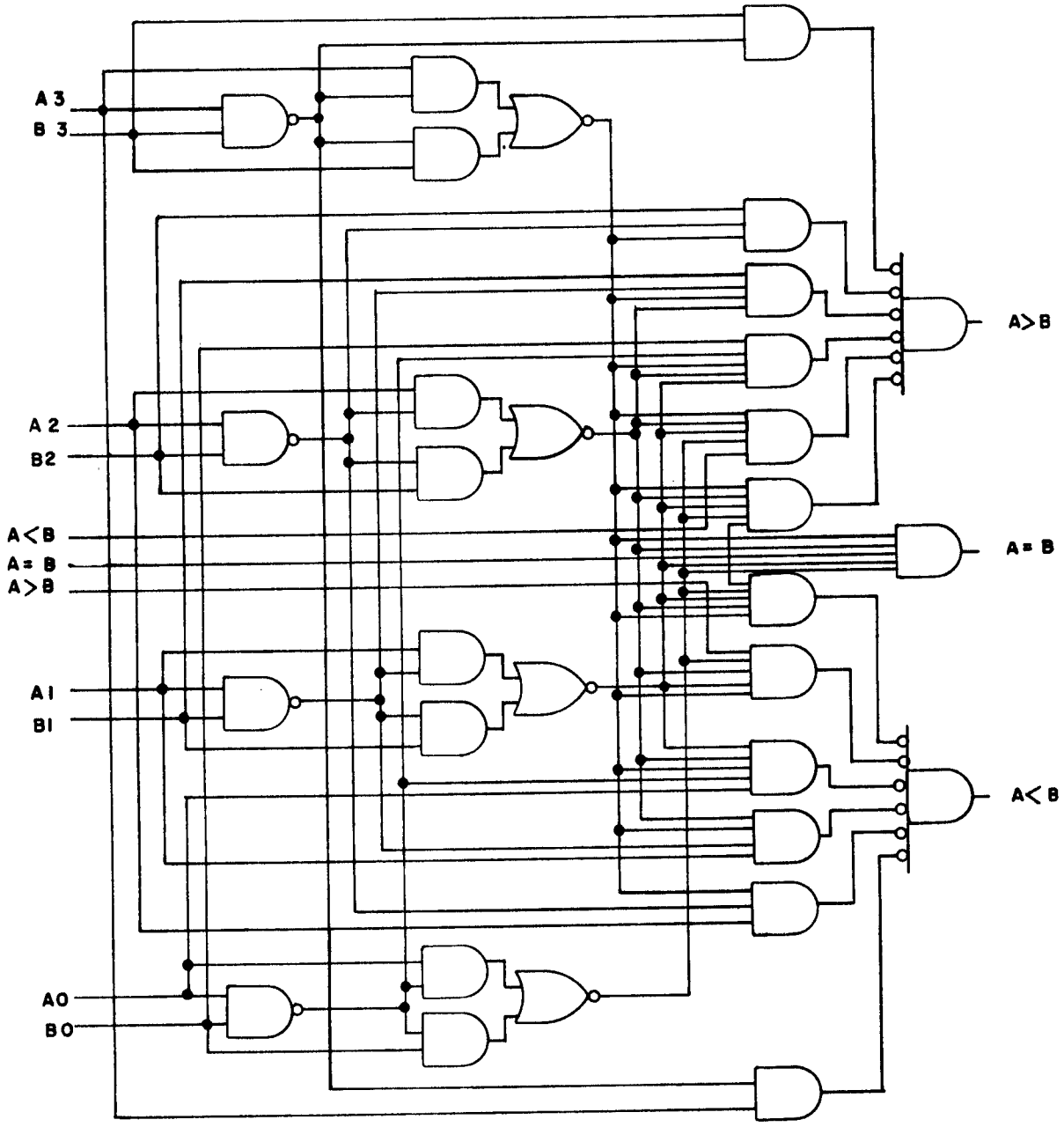
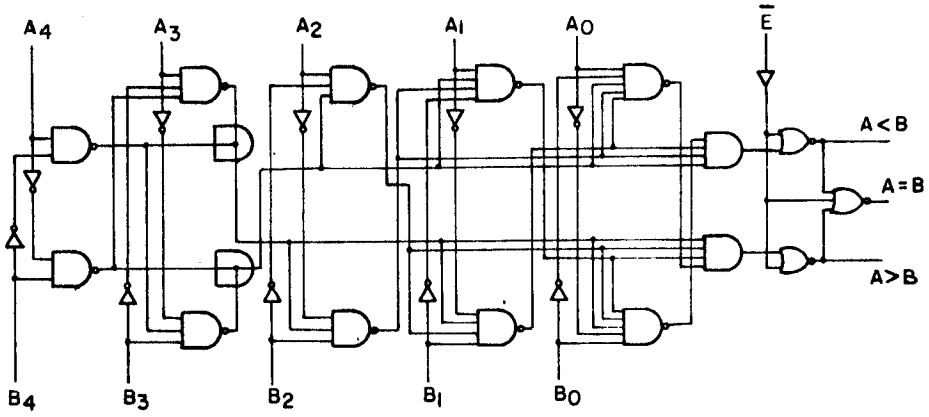


FIGURE 3. Logic diagram.

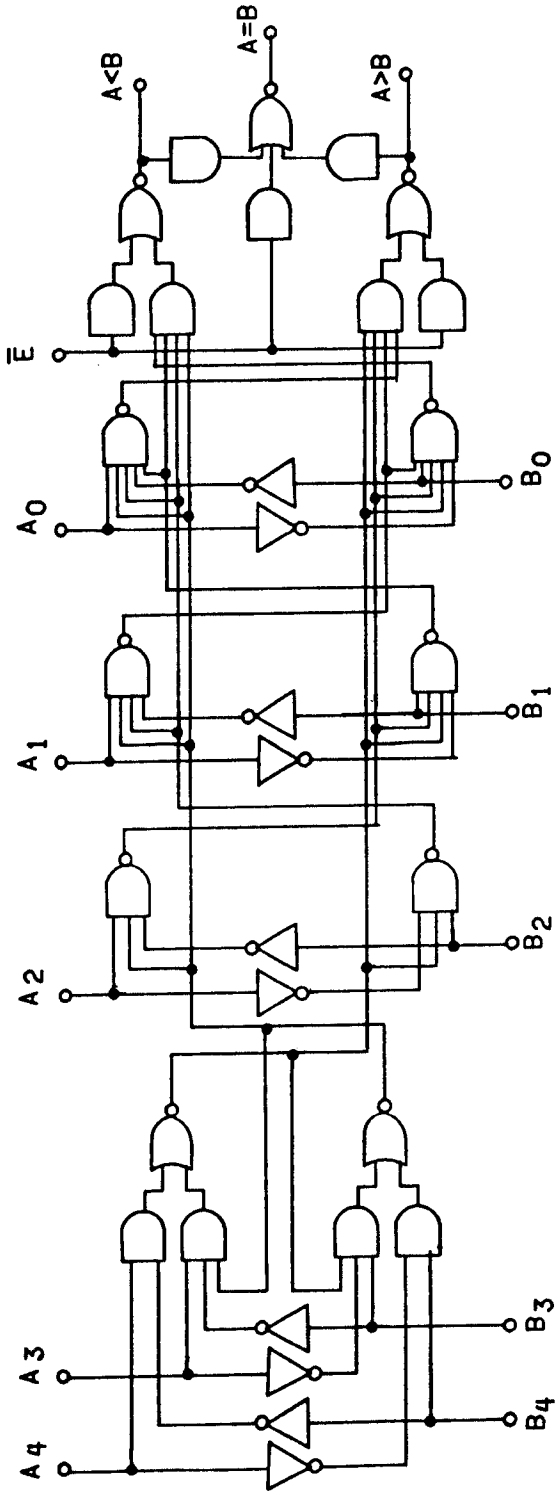
Device type 02



Circuit A

FIGURE 3. Logic diagram-- Continued.

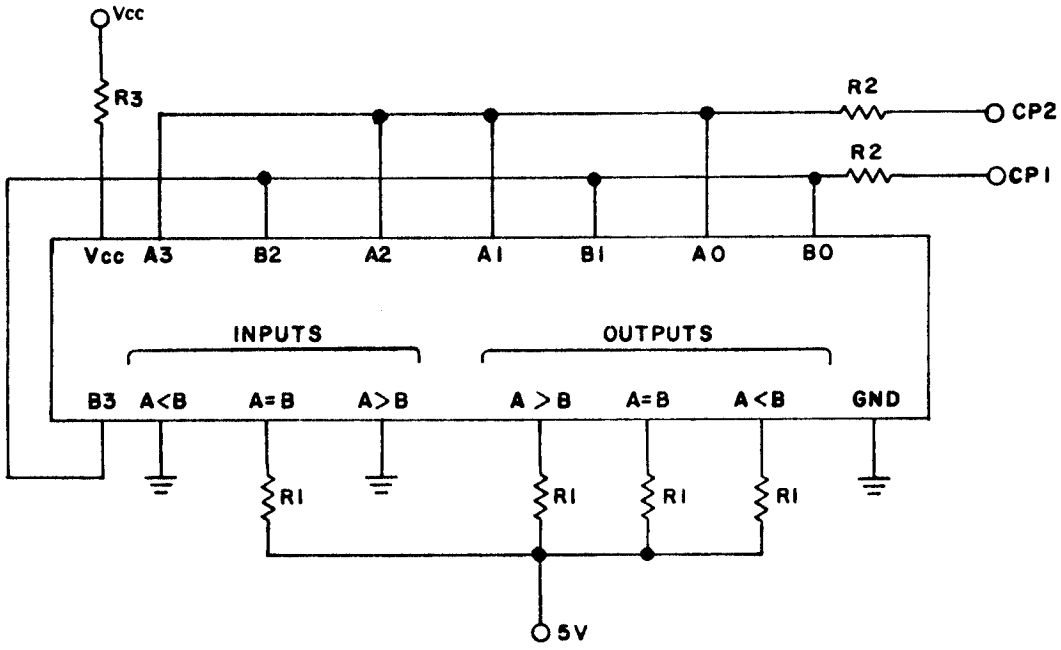
Device type 02



Circuit B

FIGURE 3. Logic diagram - Continued

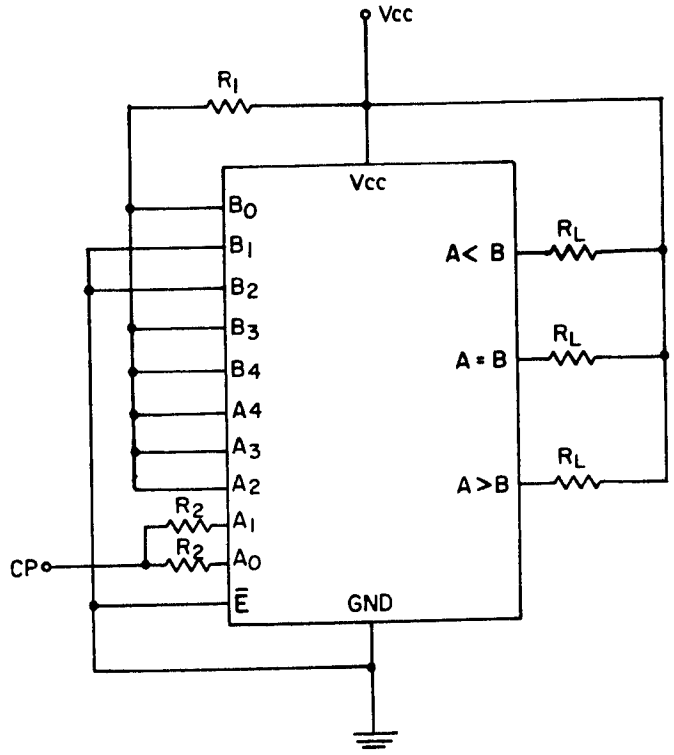
Device type 01



NOTES:
1. CP1 = 100 kHz, 50% duty cycle, 0-3 V.
2. CP2 = 50 kHz, 50% duty cycle, 0-3 V.
3. R1 = 220Ω ±5%.
4. R2 = 27Ω ±5%.
5. R3 = 5.0Ω ±5%.
6. V_{CC} shall be high enough to ensure 5.0 V minimum at the device terminal.

FIGURE 4. Burn-in and life test circuit.

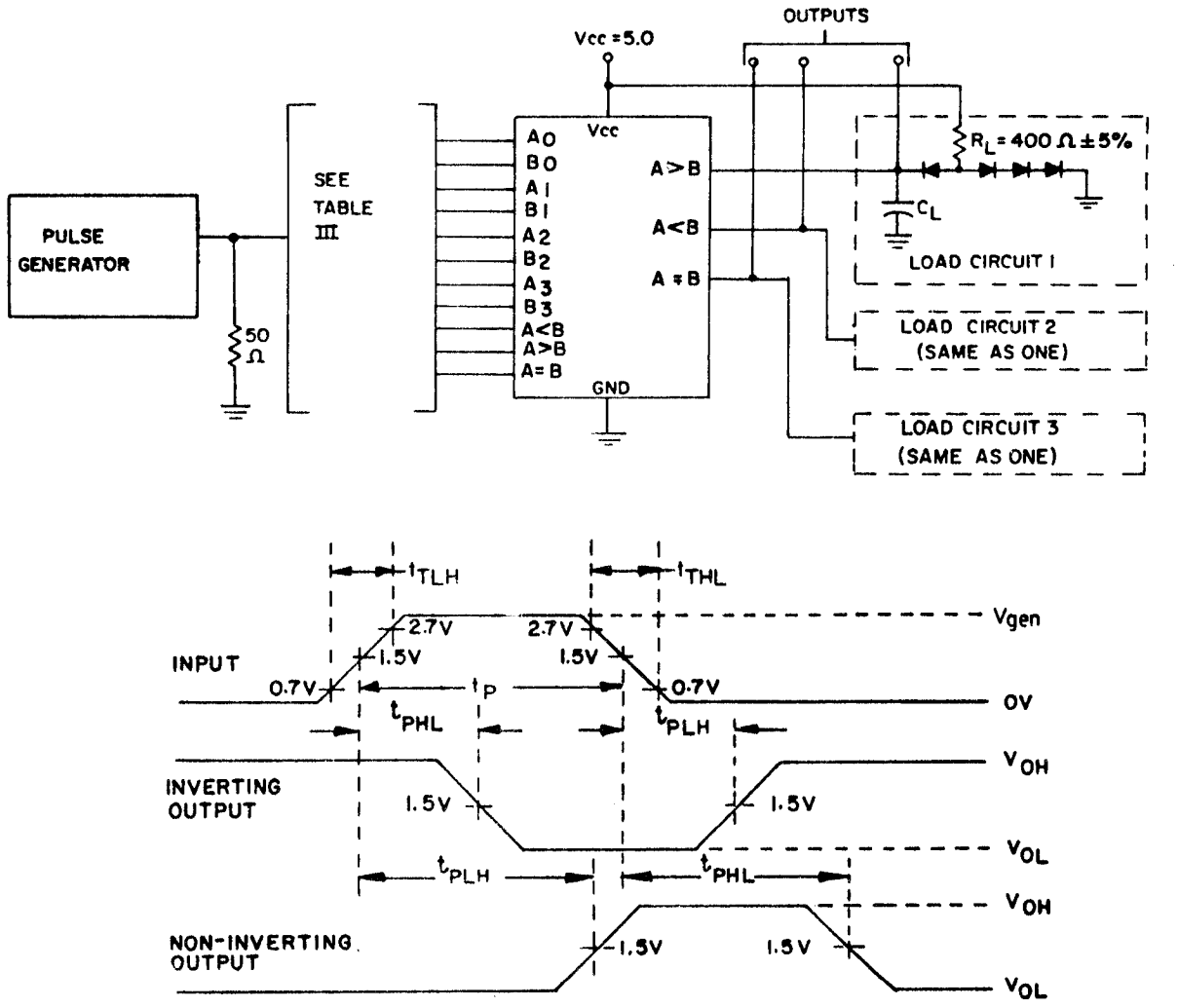
Device type 02



NOTES
1. CP = 1 MHz, 50% duty cycle, 0-3 V.
2. RL = 300Ω.
3. R_1 = 4 kΩ.
4. R_2 = 10Ω.
5. V_{CC} shall be high enough to ensure 5.0 V minimum at the device terminal.

Figure 4. Burn-in and life test circuit - Continued.

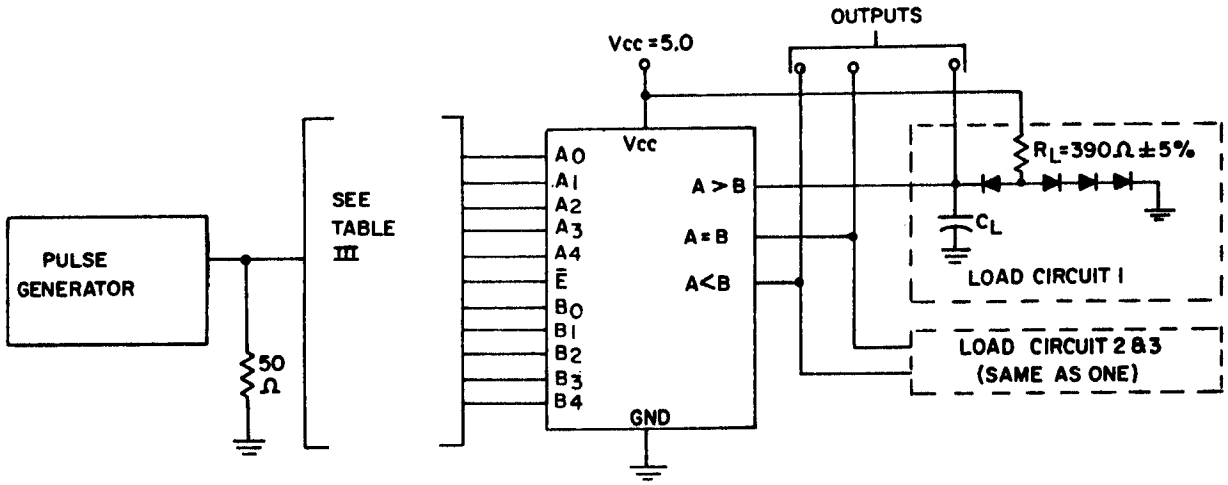
Device type 01

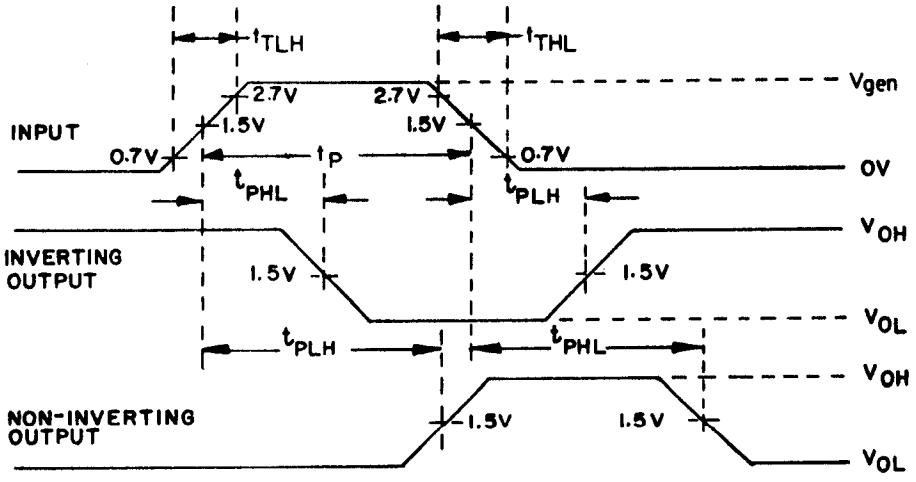


NOTES:
1. The pulse generator has the following characteristics: V_{gen} = 3 V, $t_{THL} = t_{TLH} \leq 10$ ns, t_p = 500 ns, PRR = 1 MHz, and $Z_{out} \approx 50\Omega$.
2. C_L = 50 pF and includes probe and jig capacitance.
3. All diodes are 1N3064, or equivalent.

FIGURE 5. Switching time test circuit and waveforms for device type 01.

Device type 02





NOTES:
1. The pulse generator has the following characteristics: V_{gen} = 3 V, $t_{THL} = t_{TLH} \leq 10$ ns, t_p = 500 ns, PRR = 1 MHz, and $Z_{out} \approx 50\Omega$.
2. C_L = 50 pF and includes probe and jig capacitance.
3. All diodes are 1N3064, or equivalent.

FIGURE 6. Switching time test circuit and waveforms for device type 02.

TABLE III. Group A inspection for device type 01. 1/

Subgroup	Symbol	MIL-STD-883 method	Cases E, F Test no.	1 B_3	2 A < B IN	3 A = B IN	4 A > B IN	5 A > B OUT	6 A = B OUT	7 A < B OUT	8 GND	9 B_0	10 A_0	11 B_1	12 A_1	13 A_2	14 B_2	15 A_3	16 V_{CC}	Measured terminal	Test limits Min	Test limits Max	Unit
1 T_C = +25°C	V_{OH}	3006	1	0.8 V	0.8 V	0.8 V		-400 µA			GND	0.8 V	2.0 V	0.8 V	2.0 V	2.0 V	0.8 V	2.0 V	4.5 V	A > B OUT	2.4		V
		"	2	0.8 V		2.0 V			-400 µA		"	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	"	A = B OUT	"		"
		"	3	2.0 V	2.0 V	0.8 V	0.8 V			-400 µA	"	2.0 V	0.8 V	2.0 V	0.8 V	0.8 V	2.0 V	0.8 V	"	A < B OUT	"		"
	V_{OL}	3007	4	2.0 V	2.0 V	0.8 V	0.8 V	16 mA			"	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	"	A > B OUT		0.4	"
		"	5	2.0 V	2.0 V	0.8 V	2.0 V		16 mA		"	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	"	A = B OUT		"	"
		"	6	0.8 V		2.0 V	GND			16 mA	"	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	"	A < B OUT		"	"
	V_{IC}		7	-12 mA							"								"	B_3		-1.5	"
			8		-12 mA						"								"	A < B IN		"	"
			9			-12 mA					"								"	A = B IN		"	"
			10				-12 mA				"								"	A > B IN		"	"
			11								"	-12 mA							"	B_0		"	"
			12								"		-12 mA						"	A_0		"	"
			13								"			-12 mA					"	B_1		"	"
			14								"				-12 mA				"	A_1		"	"
			15								"					-12 mA			"	A_2		"	"
			16								"						-12 mA		"	B_2		"	"
			17								"							-12 mA	"	A_3		"	"
	I_{IH1}	3010	18	GND		2.4 V					"	GND	5.5 V	GND	5.5 V	5.5 V	GND	5.5 V	5.5 V	A = B IN		120	µA
		"	19	2.4 V							"								"	B_3		"	"
		"	20	GND							"	2.4 V	5.5 V	GND	5.5 V	5.5 V	GND	5.5 V	"	B_0		"	"
		"	21	"							"	5.5 V	2.4 V	GND	"	"	"	"	"	A_0		"	"
		"	22	"							"	GND	5.5 V	2.4 V	"	"	"	"	"	B_1		"	"
		"	23	"							"	GND	"	5.5 V	2.4 V	"	"	"	"	A_1		"	"
		"	24	"							"	GND	"	GND	5.5 V	2.4 V	5.5 V	"	"	A_2		"	"
		"	25	"							"	GND	"	GND	5.5 V	5.5 V	2.4 V	"	"	B_2		"	"
		"	26	5.5 V							"							2.4 V	"	A_3		"	"
	I_{IH2}	"	27	GND	5.5 V						"	GND	5.5 V	GND	5.5 V	5.5 V	GND	5.5 V	"	A < B IN		100	"
		"	28	"			5.5 V				"	"	"	"	"	"	"	"	"	A > B IN		100	"
		"	29	"		5.5 V					"	"	"	"	"	"	"	"	"	A = B IN		300	"
		"	30	5.5 V							"								"	B_3		"	"
		"	31	GND							"	5.5 V	5.5 V	GND	5.5 V	5.5 V	GND	"	"	B_0		"	"
		"	32	"							"	5.5 V	"	GND	"	"	"	"	"	A_0		"	"
		"	33	"							"	GND	"	5.5 V	"	"	"	"	"	B_1		"	"
		"	34	"							"	"	"	5.5 V	"	"	"	"	"	A_1		"	"
		"	35	"							"	"	"	GND	"	"	5.5 V	"	"	A_2		"	"
		"	36	"							"	"	"	GND	"	"	5.5 V	"	"	B_2		"	"
		"	37	5.5 V							"								"	A_3		"	"
	I_{IH3}	"	38	GND	2.4 V						"	GND	5.5 V	GND	5.5 V	5.5 V	GND	"	"	A < B IN		40	"
		"	39	GND			2.4 V				"	GND	5.5 V	GND	5.5 V	5.5 V	GND	"	"	A > B IN		40	"
	I_{IL1}	3009	40	0.4 V							"								"	B_3	-2.0	-4.8	mA
		"	41	5.5 V		0.4 V					"	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"	"	A = B IN	"	"	"
		"	42	"							"	0.4 V	5.5 V	"	"	"	"	"	"	B_0	"	"	"
		"	43	"							"	5.5 V	0.4 V	"	"	"	"	"	"	A_0	"	"	"
		"	44	"							"	"	5.5 V	0.4 V	"	"	"	"	"	B_1	"	"	"
		"	45	"							"	"	"	5.5 V	0.4 V	"	"	"	"	A_1	"	"	"
		"	46	"							"	"	"	"	5.5 V	0.4 V	"	"	"	A_2	"	"	"
		"	47	"							"	"	"	"	"	5.5 V	0.4 V	"	"	B_2	"	"	"
		"	48	"							"	"	"	"	"	"	5.5 V	0.4 V	"	A_3	"	"	"
	I_{IL2}	"	49	"	0.4 V						"	"	"	"	"	"	"	5.5 V	"	A < B IN	-0.7	-1.6	"
		"	50	"			0.4 V				"	"	"	"	"	"	"	5.5 V	"	A > B IN	-0.7	-1.6	"

See footnotes at end of table.

TABLE III. Group A inspection for device type 01 - Continued. 1/

Subgroup	Symbol	MIL-STD-883 method	Cases E, F Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Test limits Min	Test limits Max	Unit
				B_3	A < B IN	A = B IN	A > B IN	A > B OUT	A = B OUT	A < B OUT	GND	B_0	A_0	B_1	A_1	A_2	B_2	A_3	V_{CC}				
1 T_C = +25°C	I_{OS}	3011	51	GND	GND	GND		GND			GND	GND	GND	GND	GND	GND	GND	GND	5.5 V	A > B OUT	-20	-55	mA
		"	52	GND	GND	2.0 V			GND		"	"	"	"	"	"	"	"	"	A = B OUT	"	"	"
		"	53	GND	2.0 V	GND	GND			GND	"	"	"	"	"	"	"	"	"	A < B OUT	"	"	"
	I_{CC}	3005	54	4.5 V	4.5 V	GND	4.5 V				"	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	"	V_{CC}		88	"
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.																						
7 T_C = +25°C		Truth table tests	55	0.8 V	2.0 V	0.8 V	0.8 V	H	L	L	GND	2.0 V	0.8 V	2.0 V	0.8 V	0.8 V	2.0 V	2.0 V	4.5 V	All outputs			
			56	2.0 V	0.8 V	"	2.0 V	L	"	H	"	0.8 V	2.0 V	0.8 V	2.0 V	0.8 V	0.8 V	0.8 V	"				
			57	"	2.0 V	"	0.8 V	H	"	L	"	2.0 V	0.8 V	2.0 V	0.8 V	2.0 V	0.8 V	2.0 V	"				
			58	"	0.8 V	"	2.0 V	L	"	H	"	0.8 V	2.0 V	0.8 V	2.0 V	0.8 V	2.0 V		"				
			59	"	2.0 V	"	0.8 V	H	"	L	"	2.0 V	0.8 V	0.8 V	2.0 V	2.0 V			"				
			60	"	0.8 V	"	2.0 V	L	"	H	"	0.8 V	2.0 V	2.0 V	0.8 V				"				
			61	"	2.0 V	"	0.8 V	H	"	L	"	0.8 V	2.0 V	2.0 V					"				
			62	"	0.8 V	"	2.0 V	L	"	H	"	2.0 V	0.8 V						"			See notes 2/ and 3/	
			63	"	"	"	2.0 V	H	"	L	"	"	2.0 V						"				
			64	"	"	2.0 V	0.8 V	L	H	"	"	"	"						"				
			65	"	"	2.0 V	2.0 V	H	"	"	"	"	"						"				
			66	"	2.0 V	0.8 V	0.8 V	"	L	H	"	"	"						"				
			67	"	"	0.8 V	2.0 V	"	L	L	"	"	"						"				
			68	"	"	2.0 V	0.8 V	"	H	"	"	"	"						"				
			69	"	"	2.0 V	2.0 V	"	H	"	"	"	"						"				
			70	"	0.8 V	0.8 V	0.8 V	H	L	H	"	"	"						"				
8	Repeat subgroup 7 at T_C = +125°C and T_C = -55°C.																						
9 T_C = +25°C	t_{PLH1}	3003 (Fig. 5)	71	IN		GND	GND			OUT	GND	GND	GND	GND	GND	GND	GND	2.4 V	5.0 V	B_3 to A < B	2	29	ns
			72	GND		"	GND			OUT	"	IN	2.4 V	"	"	"	"	GND	"	B_0 to A < B	"	"	"
			73	"	GND	"		OUT			"	2.4 V	IN	"	"	"	"	"	"	A_0 to A > B	"	"	"
			74	"		"	GND			OUT	"	GND	GND	IN	2.4 V	"	"	"	"	B_1 to A < B	"	"	"
			75	"	GND	"		OUT			"	"	"	2.4 V	IN	"	"	"	"	A_1 to A > B	"	"	"
			76	"	GND	"		OUT			"	"	"	GND	GND	IN	2.4 Y	"	"	A_2 to A > B	"	"	"
			77	"		"	GND			OUT	"	"	"	"	"	2.4 V	IN	"	"	B_2 to A < B	"	"	"
			78	2.4 V	GND	"		OUT			"	"	"	"	"	IN	GND	IN	"	A_3 to A > B	"	"	"
	t_{PLH2}	"	79	IN		2.4 V			OUT		"	GND	"	"	"	"	"	GND	"	B_3 to A = B	"	39	"
		"	80	GND		"			"		"	IN	"	"	"	"	"	"	"	B_0 to A = B	"	"	"
		"	81	"		"			"		"	GND	"	IN	"	"	"	"	"	B_1 to A = B	"	"	"
		"	82	"		"			"		"			GND	"	IN				A_2 to A = B	"	"	"
	t_{PLH3}	"	83	"	IN	GND		OUT			"	"	"	"	"	GND	"	"	"	A < B to A > B	"	14	"
		"	84	"	GND	IN		OUT			"	"	"	"	"	"	"	"	"	A = B to A > B	"	"	"
	t_{PLH5}	"	85	"		IN	GND			OUT	"	"	"	"	"	"	"	"	"	A = B to A < B	"	"	"
		"	86	"		GND	IN			OUT	"	"	"	"	"	"	"	"	"	A > B to A < B	"	"	"
	t_{PLH4}	"	87	GND		IN			OUT		"	"	"	"	"	"	"	"	"	A = B to A = B	"	23	"

See footnotes at end of table.

TABLE III. Group A inspection for device type 01 - Continued. 1/

Subgroup	Symbol	MIL-STD-883 method	Cases E, F Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Test limits Min	Test limits Max	Unit
				B_3	A < B	A = B	A > B	A > B	A = B	A < B	GND	B_0	A_0	B_1	A_1	A_2	B_2	A_3	V_{CC}				
T_C = [illegible]°C	t_{PHL1}	3003 (Fig. 5)	88	IN		GND	GND			OUT	GND	GND	GND	GND	GND	GND	GND	2.4 V	5.0 V	B_3 to A < B	2	34	ns
			89	GND		"	GND			OUT	"	IN	2.4 V	"	"	"	"	GND	"	B_0 to A < B	"	"	"
			90	"	GND	"		OUT			"	2.4 V	IN	"	"	"	"	"	"	A_1 to A > B	"	"	"
			91	"		"	GND			OUT	"	GND	GND	IN	2.4 V	"	"	"	"	B_1 to A < B	"	"	"
			92	"	GND	"		OUT			"	"	"	2.4 V	IN	"	"	"	"	A_1 to A > B	"	"	"
			93	"	GND	"		OUT			"	"	"	GND	GND	IN	2.4 V	"	"	A_2 to A > B	"	"	"
			94	"		"	GND			OUT	"	"	"	"	"	2.4 V	IN	"	"	B_2 to A < B	"	"	"
			95	2.4 V	GND	"		OUT			"	"	"	"	"	GND	GND	IN	"	A_3 to A > B	"	"	"
	t_{PHL2}	"	96	IN		2.4 V			OUT		"	"	"	"	"	"	"	GND	"	B_3 to A = B	"	"	"
		"	97	GND		"			"		"	IN	"	"	"	"	"	"	"	B_0 to A = B	"	"	"
		"	98	"		"			"		"	GND	"	IN	"	"	"	"	"	B_1 to A = B	"	"	"
		"	99	"		"			"		"	"	"	GND	"	IN	"	"	"	A_2 to A = B	"	"	"
	t_{PHL3}	"	100	"	IN	GND		OUT			"	"	"	"	"	GND	"	"	"	A < B to A > B	"	20	"
		"	101	"	GND	IN		OUT			"	"	"	"	"	"	"	"	"	A = B to A > B	"	"	"
	t_{PHL5}	"	102	"		IN	GND			OUT	"	"	"	"	"	"	"	"	"	A = B to A < B	"	"	"
		"	103	"		GND	IN			OUT	"	"	"	"	"	"	"	"	"	A > B to A < B	"	"	"
	t_{PHL4}	"	104	"		IN			OUT		"		"	"	"	"	"	"	"	A = B to A = B	"	"	"
T_C = [illegible]°C	t_{PLH1}	"	105	IN		GND	GND			OUT	"	GND	GND	GND	GND	GND	GND	2.4 V	"	B_3 to A < B	"	38	"
		"	106	GND		"	GND			OUT	"	IN	2.4 V	"	"	"	"	GND	"	B_0 to A < B	"	"	"
		"	107	"	GND	"		OUT			"	2.4 V	IN	"	"	"	"	"	"	A_0 to A > B	"	"	"
		"	108	"		"	GND			OUT	"	GND	GND	IN	2.4 V	"	"	"	"	B_1 to A < B	"	"	"
		"	109	"	GND	"		OUT			"	"	"	2.4 V	IN	"	"	"	"	A_1 to A > B	"	"	"
		"	110	"	GND	"		OUT			"	"	"	GND	GND	IN	2.4 V	"	"	A_2 to A > B	"	"	"
		"	111	"		"	GND			OUT	"	"	"	"	"	2.4 V	IN	"	"	B_2 to A < B	"	"	"
		"	112	2.4 V	GND	GND		OUT			"	"	"	"	"	GND	GND	IN	"	B_3 to A > B	"	"	"
	t_{PLH2}	"	113	IN		2.4 V			OUT		"	GND	"	"	"	"	"	GND	"	B_3 to A = B	"	49	"
		"	114	GND		"			"		"	IN	"	"	"	"	"	"	"	B_0 to A = B	"	"	"
		"	115	"		"			"		"	GND	"	IN	"	"	"	"	"	B_1 to A = B	"	"	"
		"	116	"		"			"		"	"	"	GND	"	IN	"	"	"	A_2 to A = B	"	"	"
	t_{PLH3}	"	117	"	IN	GND		OUT			"	"	"	"	"	"	GND	"	"	"	A < B to A > B	"	19	"
		"	118	"	GND	IN		OUT			"	"	"	"	"	"	"	"	"	"	A = B to A > B	"	"	"
	t_{PLH5}	"	119	"		IN	GND			OUT	"	"	"	"	"	"	"	"	"	"	A = B to A < B	"	"	"
		"	120	"		GND	IN			OUT	"	"	"	"	"	"	"	"	"	"	A > B to A < B	"	"	"
	t_{PLH4}	"	121	"		IN			OUT		"	"	"	"	"	"	"	"	"	"	A = B to A = B	"	30	"
	t_{PHL1}	"	122	IN		GND	GND			OUT	"	"	"	"	"	"	"	2.4 V	"	B_3 to A < B	"	43	"
		"	123	GND		"	GND			OUT	"	IN	2.4 V	"	"	"	"	GND	"	B_0 to A < B	"	"	"
		"	124	"	GND	"		OUT			"	2.4 V	IN	"	"	"	"	"	"	A_1 to A > B	"	"	"
		"	125	"		"	GND			OUT	"	GND	GND	IN	2.4 V	"	"	"	"	B_1 to A < B	"	"	"
		"	126	"	GND	"		OUT			"	"	"	2.4 V	IN	"	"	"	"	A_1 to A > B	"	"	"
		"	127	"	GND	"		OUT			"	"	"	GND	GND	IN	2.4 V	"	"	A_2 to A > B	"	"	"
		"	128	"		"	GND			OUT	"	"	"	"	"	2.4 V	IN	"	"	B_2 to A < B	"	"	"
		"	129	2.4 V	GND	"		OUT			"	"	"	"	"	GND	GND	IN	"	A_3 to A > B	"	"	"

See footnotes at end of table.

TABLE III. Group A inspection for device type 01 - Continued. 1/

Subgroup	Symbol	MIL-STD-883 method	Cases E, F Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Test limits Min	Test limits Max	Unit
				B_3	A < B IN	A = B IN	A > B IN	A > B OUT	A = B OUT	A < B OUT	GND	B_0	A_0	B_1	A_1	A_2	B_2	A_3	V_{CC}				
10 T_C = +125°C	t_{PHL2}	3003 (Fig. 5)	130	IN		2.4 V			OUT		GND	GND	GND	GND	GND	GND	GND	GND	5.0 V	B_3 to A = B		43	ns
		"	131	GND		"			"		"	IN	"	"	"	"	"	"	"	B_0 to A = B	"	"	"
		"	132	"		"			"		"	GND	"	IN	"	"	"	"	"	B_1 to A = B	"	"	"
		"	133	"		"			"		"	"	"	GND	"	IN	"	"	"	A_2 to A = B	"	"	"
	t_{PHL3}	"	134	"	IN	GND		OUT			"	"	"	"	"	GND	"	"	"	"	A < B to A > B	"	26	"
		"	135	"	GND	IN		OUT			"	"	"	"	"	"	"	"	"	"	A = B to A > B	"	"	"
	t_{PHL5}	"	136	"		IN	GND			OUT	"	"	"	"	"	"	"	"	"	"	A = B to A < B	"	"	"
		"	137	"		GND	IN			OUT	"	"	"	"	"	"	"	"	"	"	A > B to A < B	"	"	"
	t_{PHL4}	"	138	"		IN			OUT		"	"	"	"	"	"	"	"	"	"	A = B to A = B	"	"	"
11	Same tests, terminal conditions and limits as subgroup 10, except T_C = -55°C.																						

NOTES:

1/ Pins not designated may be "high" level logic, "low" level logic or open.

2/ Tests shall be performed in sequence.

3/ 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 ≥ 1.5 V when using a high speed checker single comparator.

TABLE III. Group A inspection for device type 02. 1/

Subgroup	Symbol	MIL-STD-883 method	Cases E, F Test no.	1 E	2 A < B	3 B_0	4 B_1	5 B_2	6 B_3	7 B_4	8 GND	9 A_4	10 A_3	11 A_2	12 A_1	13 A_0	14 A = B	15 A > B	16 V_{CC}	Measured terminal	Test limits Min	Test limits Max	Unit
1 T_C = +25°C	V_{OL}	3007	1	GND	16 mA	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	GND	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V		16 mA	4.5 V	A < B		0.4	V
			2	GND													16 mA			A < B			
			3	2.0 V												2.0 V		16 mA		A = B			
			4	2.0 V												2.0 V	16 mA			A > B			
			5	GND												2.0 V	16 mA			A = B			
			6	GND		2.0 V										0.8 V				A = B			
			7	2.0 V	16 mA															A < B			
	V_{OH}	3006	8	0.8 V	-800 µA															A < B	2.4		V
			9			0.8 V	2.0 V													A < B			
			10				0.8 V	2.0 V												A < B			
			11					0.8 V	2.0 V											A < B			
			12						0.8 V	2.0 V										A < B			
			13							2.0 V		2.0 V					-800 µA			A = B			
			14							0.8 V		2.0 V						-800 µA		A > B			
			15									0.8 V	2.0 V							A > B			
			16										0.8 V	2.0 V						A > B			
			17										0.8 V	0.8 V	2.0 V					A > B			
			18											0.8 V						A > B			
	I_{IL1}	3009	19	0.4 V								GND	GND	GND	GND	GND			5.5 V	E	-1.4	-3.2	mA
			20			0.4 V														B_0			
			21				0.4 V													B_1			
			22					0.4 V												B_2			
			23						0.4 V											B_3			
			24							0.4 V										B_4			
			25			GND	GND	GND	GND	GND		0.4 V								A_4			
			26										0.4 V							A_3			
			27											0.4 V						A_2			
			28												0.4 V					A_1			
			29													0.4 V				A_0			
	V_{IC}		30	-12 mA															4.5 V	E		-1.5	V
			31			-12 mA														B_0			
			32				-12 mA													B_1			
			33					-12 mA												B_2			
			34						-12 mA											B_3			
			35							-12 mA										B_4			
			36									-12 mA								A_4			
			37										-12 mA							A_3			
			38											-12 mA						A_2			
			39												-12 mA					A_1			
			40													-12 mA				A_0			
	I_{OS}	3011	41	GND	GND	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V		4.5 V	4.5 V	4.5 V	4.5 V	GND			5.5 V	A < B	-20	-70	mA
			42			4.5 V										4.5 V	GND			A = B			
			43			GND										4.5 V		GND		A > B			
	I_{CC}	3012	44																	V_{CC}		81	
	I_{IH1}	3010	45			2.4 V						5.5 V	5.5 V	5.5 V	5.5 V	5.5 V				B_0	0	80	µA
			46				2.4 V													B_1			
			47					2.4 V												B_2			
			48						2.4 V											B_3			
			49							2.4 V										B_4			
			50			5.5 V	5.5 V	5.5 V	5.5 V	5.5 V		2.4 V								A_4			

See footnotes at end of table.

TABLE III. Group A inspection for device type 02 - Continued. 1/

Subgroup	Symbol	MIL-STD-883 method	Cases E, F Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Test Limits Min	Test Limits Max	Unit
				E	A < B	B_0	B_1	B_2	B_3	B_4	GND	A_4	A_3	A_2	A_1	A_0	A = B	A > B	V_{CC}				
1 T_C = +25°C	I_{IH1}	3010	51			5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	GND		2.4 V						5.5 V	A_3	0	80	µA
		"	52			"	"	"	"	"	"			2.4 V					"	A_2	"	"	"
		"	53			"	"	"	"	"	"				2.4 V				"	A_1	"	"	"
		"	54			"	"	"	"	"	"					2.4 V			"	A_0	"	"	"
		"	55	2.4 V							"								"	E	"	"	"
	I_{IH2}	"	56			5.5 V					"	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V			"	B_0	"	200	"
		"	57				5.5 V				"	"	"	"	"	"			"	B_1	"	"	"
		"	58					5.5 V			"	"	"	"	"	"			"	B_2	"	"	"
		"	59						5.5 V		"	"	"	"	"	"			"	B_3	"	"	"
		"	60							5.5 V	"	"	"	"	"	"			"	B_4	"	"	"
		"	61			5.5 V	5.5 V	5.5 V	5.5 V	"	"	"	5.5 V						"	A_4	"	"	"
		"	62			"	"	"	"	"	"			5.5 V					"	A_3	"	"	"
		"	63			"	"	"	"	"	"				5.5 V				"	A_2	"	"	"
		"	64			"	"	"	"	"	"					5.5 V			"	A_1	"	"	"
		"	65			"	"	"	"	"	"								"	A_0	"	"	"
		"	66	5.5 V							"								"	E	"	"	"
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.																						
7 T_C = +25°C		Truth table test	67	0.8 V	H	2.0 V	2.0 V	2.0 V	2.0 V	0.8 V	GND	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	L	L	5.0 V	All outputs	See notes 2/ and 3/		
		"	68	"	L	"	"	"	2.0 V	"	"	2.0 V	"	"	"	"	"	H	"	"			
		"	69	"	"	"	"	"	0.8 V	"	"	0.8 V	"	"	"	"	"	"	"	"			
		"	70	"	"	"	"	"	"	"	"	"	2.0 V	"	"	"	"	"	"	"			
		"	71	"	H	"	"	0.8 V	"	"	"	"	0.8 V	"	"	"	"	L	"	"			
		"	72	"	L	"	"	"	"	"	"	"	"	2.0 V	"	"	"	H	"	"			
		"	73	"	H	"	0.8 V	"	"	"	"	"	"	0.8 V	"	"	"	L	"	"			
		"	74	"	L	"	"	"	"	"	"	"	"	"	2.0 V	"	"	H	"	"			
		"	75	"	"	0.8 V	"	"	"	"	"	"	"	"	0.8 V	"	H	L	"	"			
		"	76	"	"	"	"	"	"	"	"	"	"	"	0.8 V	2.0 V	L	H	"	"			
		"	77	"	"	"	"	"	"	"	"	"	2.0 V	2.0 V	2.0 V	"	"	H	"	"			
		"	78	"	H	"	"	"	"	2.0 V	"	"	2.0 V	"	"	"	"	L	"	"			
		"	79	"	L	"	"	"	"	0.8 V	"	"	0.8 V	"	"	"	"	H	"	"			
		"	80	"	H	"	"	"	2.0 V	"	"	"	"	"	"	"	"	L	"	"			
		"	81	"	L	"	"	"	0.8 V	"	"	"	"	0.8 V	"	"	"	H	"	"			
		"	82	"	H	"	"	2.0 V	"	"	"	"	"	"	"	"	"	L	"	"			
		"	83	"	L	"	"	0.8 V	"	"	"	"	"	"	0.8 V	"	"	H	"	"			
		"	84	"	H	"	2.0 V	"	"	"	"	"	"	"	"	"	"	L	"	"			
		"	85	"	H	2.0 V	0.8 V	"	"	"	"	"	"	"	"	0.8 V	"	"	"	"			
		"	86	2.0 V	L	0.8 V	0.8 V	"	"	"	"	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	"	"	"	"			
		"	87	2.0 V	"	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	"	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	"	"	"	"			
		"	88	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	2.0 V	H	"	"	"			
		"	89	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	"	L	"	"	"			
		"	90	0.8 V	H	"	"	"	"	2.0 V	"	0.8 V	"	"	"	"	"	"	"	"			
		"	91	"	L	"	"	"	"	0.8 V	"	2.0 V	"	"	"	"	"	H	"	"			
		"	92	"	H	"	"	"	"	2.0 V	"	"	0.8 V	"	"	"	"	L	"	"			
		"	93	"	L	"	"	"	0.8 V	"	"	"	2.0 V	"	"	"	"	H	"	"			
		"	94	"	H	"	"	"	2.0 V	"	"	"	"	0.8 V	"	"	"	L	"	"			
		"	95	"	L	"	"	0.8 V	"	"	"	"	"	2.0 V	"	"	"	H	"	"			
		"	96	"	H	"	"	2.0 V	"	"	"	"	"	"	0.8 V	"	"	L	"	"			
		"	97	"	L	"	0.8 V	2.0 V	"	"	"	"	"	"	2.0 V	"	"	H	"	"			
8	Repeat subgroup 7 at T_C = +125°C and T_C = -55°C.																						

See footnotes at end of table.

TABLE III. Group A inspection for device type 02 - Continued. 1/

Subgroup	Symbol	MIL-STD-883 method	Cases E, F test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Test limits Min	Test limits Max	Unit
				E	A < B	B_0	B_1	B_2	B_3	B_4	GND	A_4	A_3	A_2	A_1	A_0	A = B	A > B	V_{CC}				
9 T_C = +25°C	t_{PLH1}	3003 (Fig. 6)	98	IN		2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	GND	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	OUT		5.0 V	E to A = B	3	16	ns
	t_{PHL1}	"	99	"		"	"	"	"	"	"	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	OUT		"	E to A = B	"	14	"
	t_{PLH2}	"	100	"	OUT	"	"	"	"	"	"	GND	GND	GND	GND	GND			"	E to A < B	"	19	"
	t_{PHL2}	"	101	"	OUT	"	"	"	"	"	"	GND	GND	GND	GND	GND			"	E to A < B	"	17	"
	t_{PLH3}	"	102	"		GND	GND	GND	GND	GND	"	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V		OUT	"	E to A > B	"	19	"
	t_{PHL3}	"	103	"		GND	GND	GND	GND	GND	"	"	"	"	"	2.4 V		OUT	"	E to A > B	"	17	"
	t_{PLH4}	"	104	GND		2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	"	"	"	"	"	IN	OUT		"	A_0 to A = B	9	42	"
		"	105	"		"	"	"	"	"	"	"	"	"	IN	2.4 V	"		"	A_1 to A = B	"	"	"
		"	106	"		"	"	"	"	"	"	"	"	IN	2.4 V	"	"		"	A_2 to A = B	"	"	"
		"	107	"		"	"	"	"	"	"	"	IN	2.4 V	"	"	"		"	A_3 to A = B	"	"	"
		"	108	"		"	"	"	"	"	"	IH	2.4 V	"	"	"	"		"	A_4 to A = B	"	"	"
	t_{PHL4}	"	109	"		"	"	"	"	"	"	2.4 V	"	"	"	IN	"		"	A_0 to A = B	"	"	"
		"	110	"		"	"	"	"	"	"	"	"	"	IN	2.4 V	"		"	A_1 to A = B	"	"	"
		"	111	"		"	"	"	"	"	"	"	"	IN	2.4 V	"	"		"	A_2 to A = B	"	"	"
		"	112	"		"	"	"	"	"	"	"	IN	2.4 V	"	"	"		"	A_3 to A = B	"	"	"
		"	113	"		"	"	"	"	"	"	IN	2.4 V	"	"	"	"		"	A_4 to A = B	"	"	"
	t_{PLH5}	"	114	"		IN	"	"	"	"	"	2.4 V	"	"	"	"	"		"	B_0 to A = B	"	"	"
		"	115	"		2.4 V	IN	"	"	"	"	"	"	"	"	"	"		"	B_1 to A = B	"	"	"
		"	116	"		"	2.4 V	IN	"	"	"	"	"	"	"	"	"		"	B_2 to A = B	"	"	"
		"	117	"		"	"	2.4 V	IN	"	"	"	"	"	"	"	"		"	B_3 to A = B	"	"	"
		"	118	"		"	"	"	2.4 V	IN	"	"	"	"	"	"	"		"	B_4 to A = B	"	"	"
	t_{PHL5}	"	119	"		IN	"	"	"	2.4 V	"	"	"	"	"	"	"	"	"	B_0 to A = B	"	"	"
		"	120	"		2.4 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	B_1 to A = B	"	"	"
		"	121	"		"	2.4 V	IN	"	"	"	"	"	"	"	"	"	"	"	B_2 to A = B	"	"	"
		"	122	"		"	"	2.4 V	IN	"	"	"	"	"	"	"	"	"	"	B_3 to A = B	"	"	"
	t_{PLH5}	"	123	"		"	"	"	2.4 V	IN	"	"	"	"	"	"	"	"	"	B_4 to A = B	"	"	"
	t_{PLH6}	"	124	"	OUT	"	"	"	"	2.4 V	"	"	"	"	"	IN			"	A_0 to A < B	6	27	"
	t_{PHL6}	"	125	"	"	"	"	"	"	2.4 V	"	"	"	"	"	IN			"	A_0 to A < B	6	25	"
	t_{PLH7}	"	126	"	"	IN	GND	GND	GND	GND	"	GND	GND	GND	GND	GND			"	B_0 to A < B	3	22	"
	t_{PHL7}	"	127	"	"	IN	"	"	"	"	"	"	"	"	"	GND			"	B_0 to A < B	"	20	"
	t_{PLH8}	"	128	"		GND	"	"	"	"	"	"	"	"	"	IN		OUT	"	A_0 to A > B	"	22	"
	t_{PHL8}	"	129	"		GND	"	"	"	"	"	"	"	"	"	IN		OUT	"	A_0 to A > B	"	20	"
	t_{PLH9}	"	130	"		IN	2.4 V	2.4 V	2.4 V	2.4 V	"	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V		OUT	"	B_0 to A > B	6	27	"
	t_{PHL9}	"	131	"		IN	2.4 V	2.4 V	2.4 V	2.4 V	"	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V		OUT	"	B_0 to A > B	6	15	"

See footn nd of table.

TABLE III. Group A inspection for device type 02 - Continued. 1/

Subgroup	Symbol	MIL-STD-883 method	Cases E, F Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Test limits Min	Test limits Max	Unit
				E	A < B	B_0	B_1	B_2	B_3	B_4	GND	A_4	A_3	A_2	A_1	A_0	A = B	A > B	V_{CC}				
10 T_C = +125°C	t_{PLH1}	3003 (Fig. 6)	132	IN		2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	GND	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	OUT		5.0 V	E to A = B	3	22	ns
	t_{PHL1}	"	133	"		"	"	"	"	"	"	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	OUT		"	E to A = B	"	19	"
	t_{PLH2}	"	134	"	OUT	"	"	"	"	"	"	GND	GND	GND	GND	GND			"	E to A < B	"	25	"
	t_{PHL2}	"	135	"	OUT	"	"	"	"	"	"	GND	GND	GND	GND	GND			"	E to A < B	"	21	"
	t_{PLH3}	"	136	"		GND	GND	GND	GND	GND	"	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V		OUT	"	E to A > B	"	25	"
	t_{PHL3}	"	137	"		GND	GND	GND	GND	GND	"	"	"	"	"	"		OUT	"	E to A > B	"	21	"
	t_{PLH4}	" " " " "	138 139 140 141 142	GND " " " "		2.4 V " " " "	2.4 V " " " "	2.4 V " " " "	2.4 V " " " "	2.4 V " " " "	" " " " "	" " " " IN	" " " IN 2.4 V	" " IN 2.4 V "	" IN 2.4 V " "	" 2.4 V " " "	IN 2.4 V " " "	OUT " " " "		" " " " "	A_0 to A = B A_1 to A = B A_2 to A = B A_3 to A = B A_4 to A = B	9 " " " "	55 " " " "	" " " " "
	t_{PHL4}	" " " " "	143 144 145 146 147	" " " " "		" " " " "	" " " " "	" " " " "	" " " " "	" " " " "	" " " " "	2.4 V " " " IN	" " " IN 2.4 V	" " IN 2.4 V "	" IN 2.4 V " "	IN 2.4 V " " "	" " " " "		" " " " "	A_0 to A = B A_1 to A = B A_2 to A = B A_3 to A = B A_4 to A = B	" " " " "	" " " " "	" " " " "
	t_{PLH5}	" " " " "	148 149 150 151 152	" " " " "		IN 2.4 V " " "	" IN 2.4 V " "	" " IN 2.4 V "	" " " IN 2.4 V	" " " " IN	" " " " "	2.4 V " " " "	" " " " "	" " " " "	" " " " "	" " " " "	" " " " "	" " " " "		" " " " "	B_0 to A = B B_1 to A = B B_2 to A = B B_3 to A = B B_4 to A = B	" " " " "	" " " " "	" " " " "
	t_{PHL5}	" " " " "	153 154 155 156 157	" " " " "		IN 2.4 V " " "	" IN 2.4 V " "	" " IN 2.4 V "	" " " IN 2.4 V	2.4 V " " " IN	" " " " "	" " " " "	" " " " "	" " " " "	" " " " "	" " " " "	" " " " "	" " " " "		" " " " "	B_0 to A = B B_1 to A = B B_2 to A = B B_3 to A = B B_3 to A = B	" " " " "	" " " " "	" " " " "
	t_{PLH6}	"	158	"	OUT	"	"	"	"	2.4 V	"	"	"	"	"	IN			"	A_0 to A < B	6	39	"
	t_{PHL6}	"	159	"	"	"	"	"	"	2.4 V	"	"	"	"	"	IN			"	A_0 to A < B	6	32	"
	t_{PLH7}	"	160	"	"	IN	GND	GND	GND	GND	"	GND	GND	GND	GND	GND			"	B_0 to A < B	3	30	"
	t_{PHL7}	"	161	"	"	IN	GND	GND	GND	GND	"	GND	GND	GND	GND	GND			"	B_0 to A < B	3	26	"

See footnotes at end of table.

TABLE III. Group A inspection for device type 02 - Continued. 1/

Subgroup	Symbol	MIL-STD-883 method	Cases E, F Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Test limits Min	Test limits Max	Unit
				E	A < B	B_0	B_1	B_2	B_3	B_4	GND	A_4	A_3	A_2	A_1	A_0	A = B	A > B	V_{CC}				
10 T_C = +125°C	t_{PLH8}	3003 (Fig. 6)	162	GND		GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	IN		OUT	5.0 V	A_0 to A > B	3	30	ns
	t_{PHL8}	"	163	"		GND	GND	GND	GND	GND	"	GND	GND	GND	GND	IN		"	"	A_0 to A > B	3	25	"
	t_{PLH9}	"	164	"		IN	2.4 V	2.4 V	2.4 V	2.4 V	"	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V		"	"	B_0 to A > B	6	39	"
	t_{PHL9}	"	165	"		IN	2.4 V	2.4 V	2.4 V	2.4 V	"	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V		"	"	B_0 to A > B	6	35	"
11	Same conditions and limits as subgroup 10, except T_C = -55°C.																						

NOTES:
1/ Pins not designated may be "high" level logic, "low" level logic or open.
2/ Tests shall be performed in sequence.
3/ 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 ≥ 1.5 V when using a high speed checker single comparator.

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).

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. Electrical test requirements shall be as specified in table II herein.

b. Subgroups 4, 5, and 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 test requirements 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:

(1) Test condition D or E, using the circuit shown on figure 4, or equivalent.

(2) T_A = +125°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 logistic support of existing equipment.

6.2 Ordering data. The acquisition document should specify the following:

a. Complete part number (see 1.2).

b. Requirements for delivery of one copy of the quality conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.

c. Requirements for certificate of compliance, if applicable.

d. Requirements for notification of change of product or process to the contracting activity in addition to notification to the qualifying activity, if applicable.

e. Requirements for failure analysis (including required test condition of method 5003 of MIL-STD-883), corrective action and reporting of results, if applicable.

f. Requirements for product assurance options.

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

h. Requirements for "JAN" marking.

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	Ground zero voltage potential.
I_{IN}	Current flowing into an input terminal.
V_{IN}	Voltage level at an input terminal.

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

6.5 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	5485
02	9324

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

TABLE IV. Manufacturers' designations.

Device type	Circuit			
	A	B	C	D
	Fairchild Semiconductor	Motorola	Signetics	National Semiconductor
01	X	X	X	X
02	X	X		

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

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

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

Preparing activity:
Air Force - 17

Agent:
DLA - ES

(Project 5962-0878)