

INCH-POUND

MIL-M-38510/383B

8 November 2004

SUPERSEDING

MIL-M-38510/383A

11 February 1988

MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, BIPOLAR, ADVANCED LOW POWER SCHOTTKY TTL,
OCTAL BUFFER GATES WITH THREE STATE OUTPUTS, MONOLITHIC SILICON

Inactive for new design after 8 January 1996.

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

The requirements for acquiring the product herein shall consist of this specification sheet and MIL-PRF 38535

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 outlines and lead finishes are provided for each type and are reflected in the complete part number. For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.3).

1.2 Part or Identifying Number (PIN). The PIN is in accordance with MIL-PRF-38535, and as specified herein.

1.2.1 Device types. The device types are as follows:

<u>Device type</u>	<u>Circuit</u>
01	Inverting octal buffer gate (inverting control inputs)
02	Noninverting octal buffer gate (complimentary control inputs)
03	Noninverting octal buffer gates (inverting control inputs)

1.2.2 Device class. The device class is the product assurance level as defined in MIL-PRF-38535.

1.2.3 Case outlines. The case outlines are as designated in MIL-STD-1835 and as follows:

<u>Outline letter</u>	<u>Descriptive designator</u>	<u>Terminals</u>	<u>Package style</u>
R	GDIP1-T20 or CDIP2-T20	20	Dual-in-line
S	GDFP2-F20 or CDFP3-F20	20	Flat pack
X	CQCC2-N20	20	Square leadless chip carrier
2	CQCC1-N20	20	Square leadless chip carrier

Comments, suggestions, or questions on this document should be addressed to: Commander, Defense Supply Center Columbus, ATTN: DSCC-VAS, P. O. Box 3990, Columbus, OH 43218-3990, or emailed to bipolar@dsc.dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <http://assist.daps.dla.mil>.

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° to +150°C
Maximum power dissipation, per device (P _D) <u>1/</u>	
Device types 01	137.5 mW
Device types 02 and 03	165 mW
Lead temperature (soldering, 10 seconds)	+300°C
Thermal resistance, junction to case (θ _{JC})	(See MIL-STD-1835)
Junction temperature (T _J) <u>2/</u>	175°C

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
Maximum low level input voltage (V _{IL})	0.8 V except at (T _C = +125 °C, 0.7 V)
Case operating temperature range (T _C)	-55°C to +125°C

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications and Standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-38535 - Integrated Circuits (Microcircuits) Manufacturing, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-883 - Test Method Standard for Microelectronics.
MIL-STD-1835 - Interface Standard Electronic Component Case Outlines

(Copies of these documents are available online at <http://assist.daps.dla.mil/quicksearch/> or <http://assist.daps.dla.mil> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

1/ Must withstand the added P_D due to short-circuit test (e.g., I_O).
2/ Maximum junction temperature should not be exceeded except in accordance with allowable short duration burn-in screening condition in accordance with MIL-PRF-38535.

3. REQUIREMENTS

3.1 Qualification. Microcircuits furnished under this specification shall be products that are manufactured by a manufacturer authorized by the qualifying activity for listing on the applicable qualified manufacturers list before contract award (see 4.3 and 6.4).

3.2 Item requirements. The individual item requirements shall be in accordance with MIL-PRF-38535 and as specified herein or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein.

3.3 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535 and herein.

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

3.3.2 Truth tables. The truth tables shall be as specified on figure 2.

3.3.3 Schematic circuits. The schematic circuits shall be maintained by the manufacturer and made available to the qualifying activity and the preparing activity upon request.

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

3.4 Lead material and finish. The lead material and finish shall be in accordance with MIL-PRF-38535 (see 6.6).

3.5 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.

3.6 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.

3.7 Marking. Marking shall be in accordance with MIL-PRF-38535.

3.8 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 9 (see MIL-PRF-38535, appendix A).

4. VERIFICATION

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with MIL-PRF-38535 or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not effect the form, fit, or function as described herein.

4.2 Screening. Screening shall be in accordance with MIL-PRF-38535 and shall be conducted on all devices prior to qualification and conformance inspection. The following additional criteria shall apply:

- a. The burn-in test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1015 of MIL-STD-883.
- 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. Additional screening for space level product shall be as specified in MIL-PRF-38535.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55°C ≤ T _C ≤ +125°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 _{IL} = 0.7 V	All	2.4		V
High level output voltage	V _{OH2}	V _{CC} = 4.5 V, V _{IL} = 0.8 V, I _{OH} = -12mA V _{IH} = 2.0 V (02, 03 only) T _C = +125°C, V _{IL} = 0.7 V	All	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 _{IL} = 0.7 V	All		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 _{IL} = 0.7 V	All		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	All		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	All		-20	μA
Low level input current (all inputs)	I _{IL}	V _{CC} = 5.5 V, V _{IN} = 0.4 V	All	0	-100	μA
High level input current (all inputs)	I _{IH1}	V _{CC} = 5.5 V, V _{IN} = 2.7 V	All		20	μA
High level input current (all inputs)	I _{IH2}	V _{CC} = 5.5 V, V _{IN} = 7.0 V	All		100	μA
Output current <u>1/</u>	I _O	V _{CC} = 5.5 V, V _{OUT} = 2.25 V	All	-20	-112	mA
Supply current	I _{CCH}	V _{CC} = 5.5 V, Outputs high	01		10	mA
			02		17	
			03		18	
	I _{CCL}	V _{CC} = 5.5 V Outputs low	01		23	mA
			02		28	
			03		25	
	I _{CCZ}	V _{CC} = 5.5 V, All outputs disabled	01		25	mA
			02		32	
			03		29	

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T _C ≤ +125°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}	V _{CC} = 5.0 V, C _L = 50 pF, R _L = 500 Ω	01	3	12	ns
			02	3	13	
			03	2	13	
Propagation delay time (high to low level)	t _{PHL1}		01	2	11	ns
			02	3	14	
			03	3	16	
Output enable time to low level	t _{PZL}		01	5	20	ns
			02	5	18	
			03	2	18	
Output enable time to high level	t _{PZH}	01	5	15	ns	
		02	5	18		
		03	2	18		
Output disable time from low level	t _{PLZ}	01	3	18	ns	
		02	2	12		
		03	1	12		
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}.

TABLE II. Electrical test requirements.

MIL-PRF-38535 test requirements	Subgroups (see table III)	
	Class S devices	Class B devices
Interim electrical parameters	1	1
Final electrical test parameters	1*, 2, 3, 7, 9, 10, 11	1*, 2, 3, 7, 9
Group A test requirements	1, 2, 3, 7, 8, 9, 10, 11	1, 2, 3, 7, 8, 9, 10, 11
Group B electrical test parameters when using the method 5005 QCI option	1, 2, 3, 9, 10, 11	N/A
Group C end-point electrical parameters	1, 2, 3, 9, 10, 11	1, 2, 3
Group D end-point electrical parameters	1, 2, 3	1, 2, 3

*PDA applies to subgroup 1.

4.3 Qualification inspection. Qualification inspection shall be in accordance with MIL-PRF-38535.

4.4 Technology Conformance inspection (TCI). Technology conformance inspection shall be in accordance with MIL-PRF-38535 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 III of MIL-PRF-38535 and 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 MIL-PRF-38535.

4.4.3 Group C inspection. Group C inspection shall be in accordance with table IV of MIL-PRF-38535 and as follows:

- a. End-point electrical parameters shall be as specified in table II herein.
- b. The steady-state life test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1005 of MIL-STD-883.

4.4.4 Group D inspection. Group D inspection shall be in accordance with table V of MIL-PRF-38535. 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.

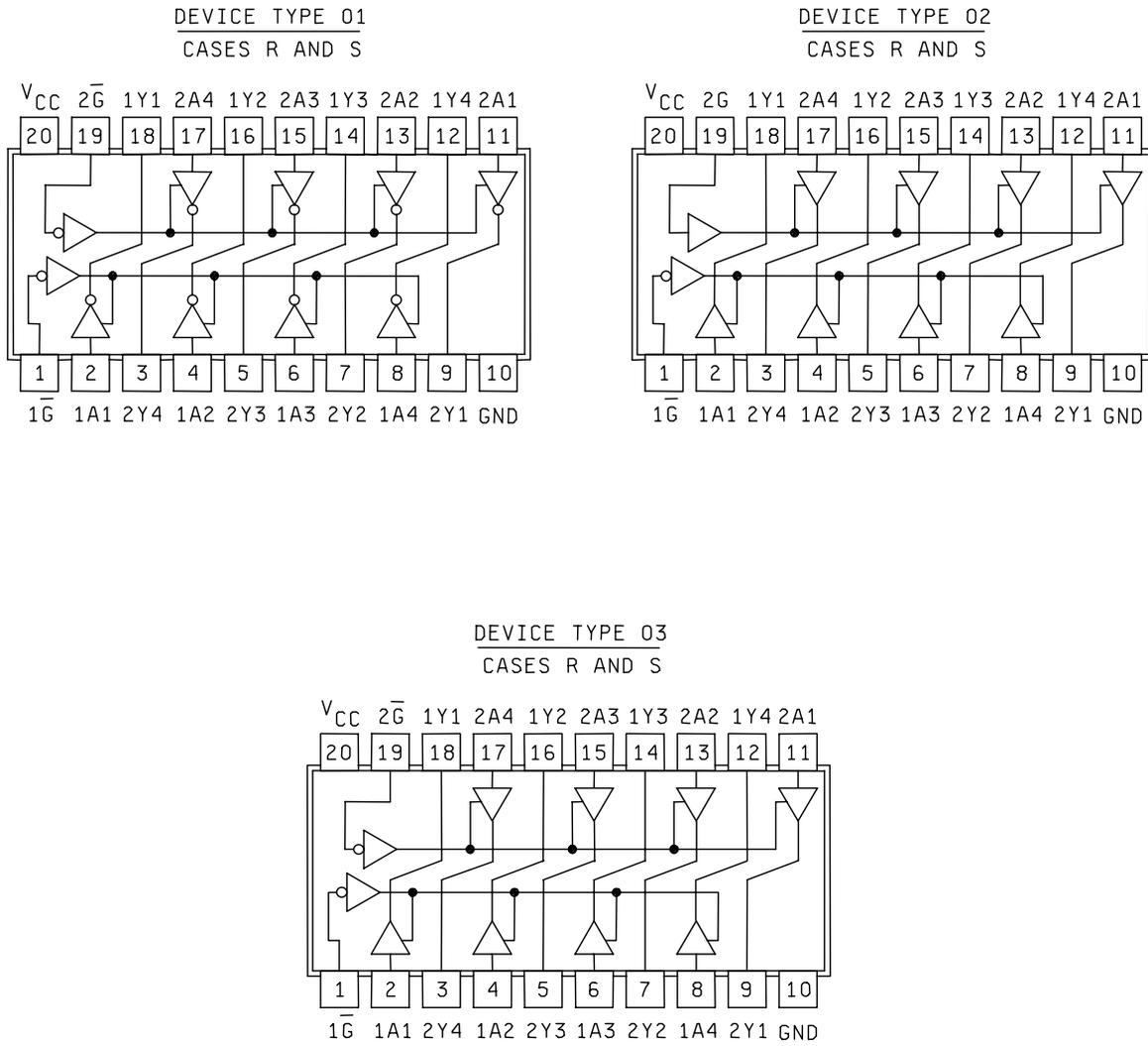
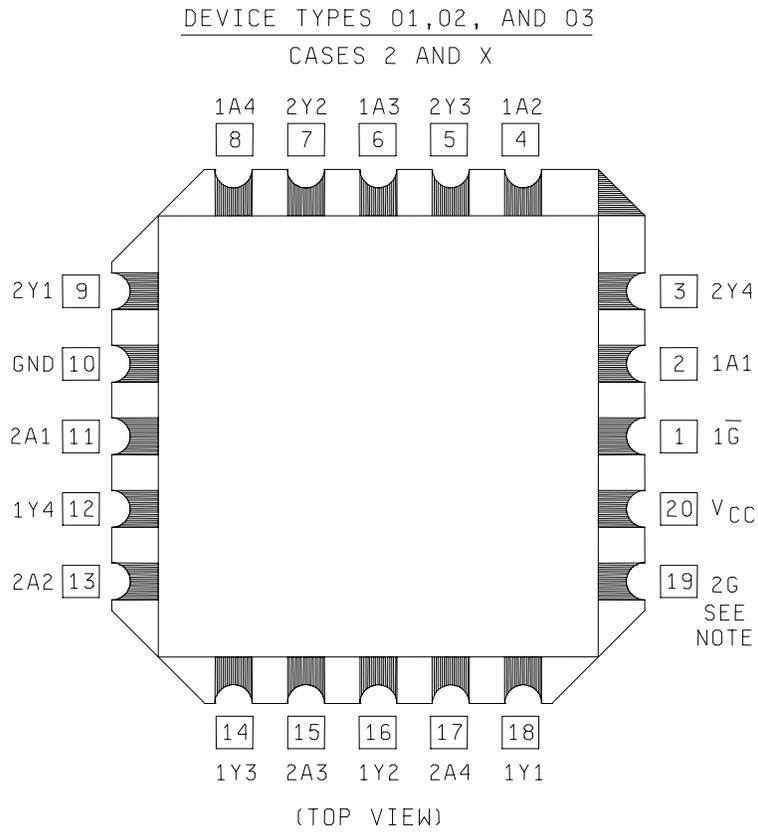


FIGURE 1. Logic diagrams and terminal connections.



NOTES:

1/ For 01 and 03 pin 19 = $2\bar{G}$.

FIGURE 1. Logic diagrams and terminal connections - Continued.

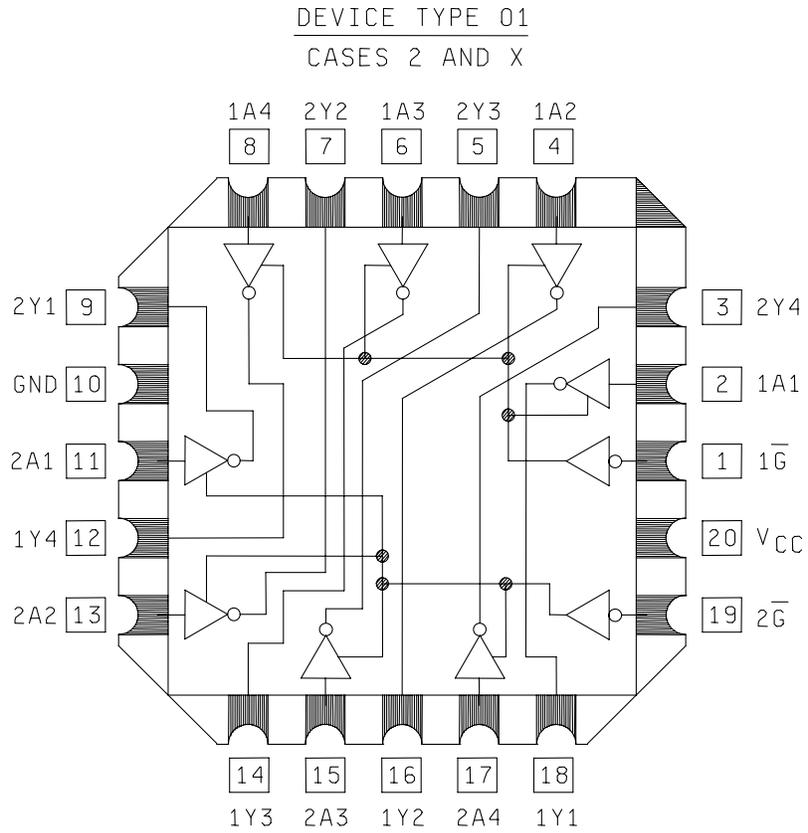
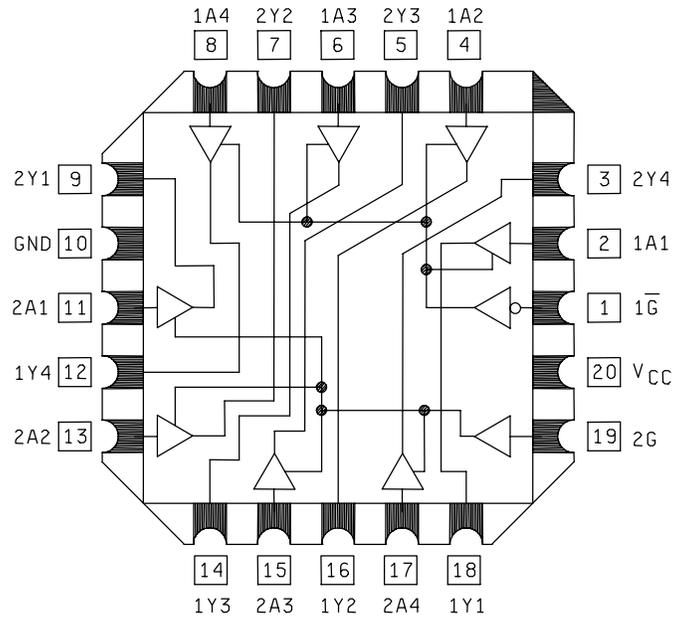


FIGURE 1. Logic diagrams and terminal connections - Continued.

MIL-M-38510/383B

DEVICE TYPE 02
CASES 2 AND X



DEVICE TYPE 03
CASES 2 AND X

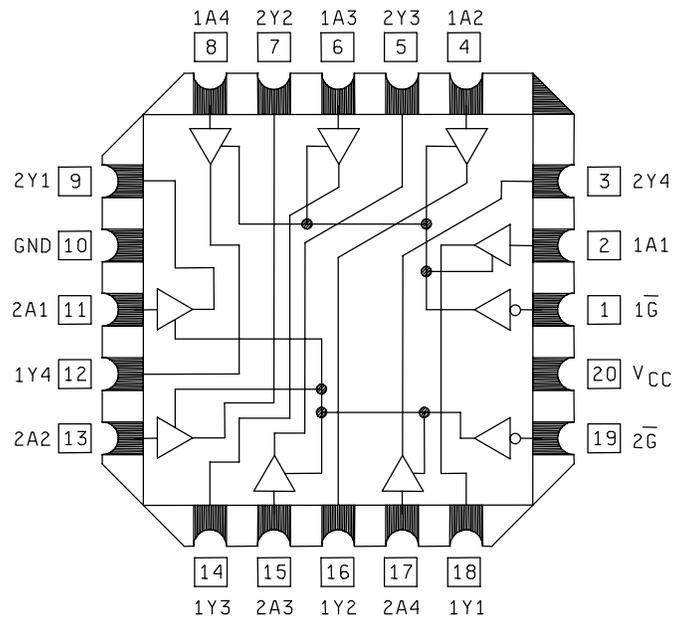


FIGURE 1. Logic diagrams and terminal connections - Continued.

Device type 01

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

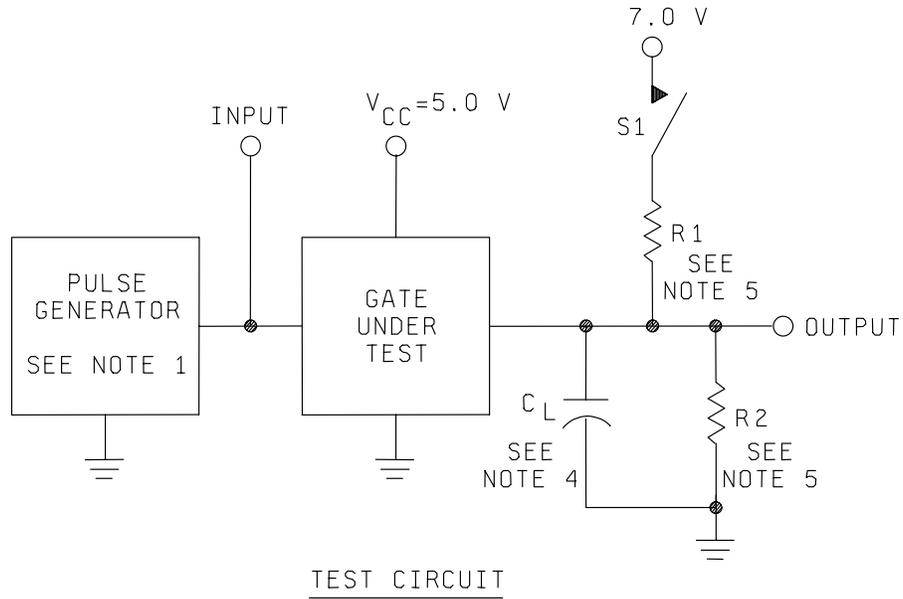
Device type 02

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.

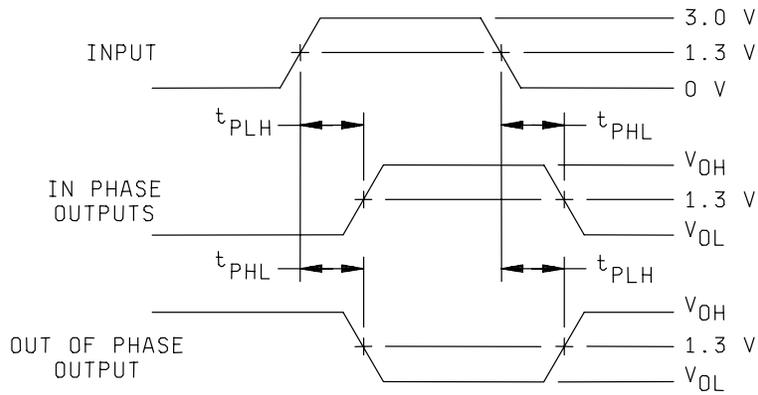


NOTES:

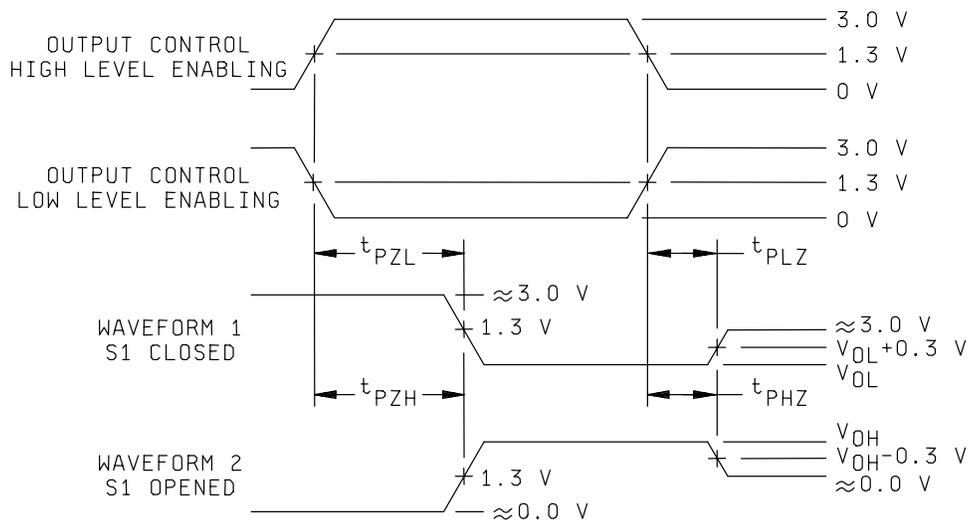
1. All input pulses are supplied by generators having the following characteristics: $t_1 = t_0 = 6 \pm 1.5$ ns, $PRR \leq 1$ MHz, $Z_{OUT} \approx 50 \Omega$.
2. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is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

FIGURE 3. Switching time test circuit for all device types.

MIL-M-38510/383B



VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES



VOLTAGE WAVEFORMS
ENABLE AND DISABLE TIMES,
THREE-STATE OUTPUTS

FIGURE 3. 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	Cases R,S,X,2 Test 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 \bar{G}	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y4	2A2	1Y3	2A3	1Y2	2A4	1Y1	2 \bar{G}	V _{CC}		Min	Max					
1 T _c = 25°C	V _{OH1}	3006	1	0.8 V	0.8 V									GND									2 \bar{G}	V _{CC}	1Y1	2.4		V			
			2	"			0.8 V																			1Y2	"	"	"		
			3	"						0.8 V																	1Y3	"	"	"	
			4	"									0.8 V				-3 mA										1Y4	"	"	"	
			5	"																				0.8 V			2Y1	"	"	"	
			6	"																							2Y2	"	"	"	
			7	"																							2Y3	"	"	"	
			8	"																							2Y4	"	"	"	
	V _{OH2}	"	"	9	0.8 V	0.8 V																					1Y1	2.0		"	
				10	"			0.8 V																				1Y2	"	"	"
				11	"					0.8 V																		1Y3	"	"	"
				12	"								0.8 V															1Y4	"	"	"
				13	"																					0.8 V		2Y1	"	"	"
				14	"																							2Y2	"	"	"
				15	"																							2Y3	"	"	"
				16	"																							2Y4	"	"	"
	V _{OL1}	3007	"	17	0.8 V	2.0 V																					1Y1		0.4	"	
				18	"			2.0 V																			1Y2		"	"	
				19	"						2.0 V																	1Y3		"	"
				20	"							2.0 V						12 mA										1Y4		"	"
				21	"										12 mA		2.0 V									0.8 V		2Y1		"	"
				22	"																							2Y2		"	"
				23	"																							2Y3		"	"
				24	"																							2Y4		"	"
	V _{OL2}	"	"	25	0.8 V	2.0 V		12 mA																			1Y1		0.45	"	
				26	"			2.0 V																			1Y2		"	"	
				27	"					2.0 V																		1Y3		"	"
				28	"								2.0 V															1Y4		"	"
				29	"																					0.8 V		2Y1		"	"
				30	"																							2Y2		"	"
				31	"																							2Y3		"	"
				32	"																							2Y4		"	"
	I _{ozH}	"	"	33	2.0 V																						1Y1		20	μ A	
				34	"																						1Y2		"	"	
				35	"																							1Y3		"	"
				36	"																							1Y4		"	"
				37	"																							2Y1		"	"
				38	"																							2Y2		"	"
				39	"																							2Y3		"	"
				40	"																							2Y4		"	"
	I _{ozL}	"	"	41	2.0 V																						1Y1		-20	"	
				42	"																						1Y2		"	"	
				43	"																						1Y3		"	"	
				44	"																						1Y4		"	"	
				45	"																							2Y1		"	"
				46	"																							2Y2		"	"
				47	"																							2Y3		"	"
				48	"																							2Y4		"	"
	I _L	3009	"	49	0.4 V																						1 \bar{G}	1/	1/	"	
				50		0.4 V																						1A1		"	"
				51			0.4 V																					1A2		"	"
				52				0.4 V																				1A3		"	"
				53					0.4 V																			1A4		"	"
				54						0.4 V																		2A1		"	"
				55							0.4 V																	2A2		"	"
				56								0.4 V																2A3		"	"
				57									0.4 V															2A4		"	"
				58										0.4 V														2 \bar{G}		"	"

See footnotes at end of table.

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	Cases R,S,X,2 Test 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 \bar{G}	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y4	2A2	1Y3	2A3	1Y2	2A4	1Y1	2 \bar{G}	V _{CC}		Min	Max				
1 T _c = 25°C	I _{IH1}	3010	59	2.7 V									GND										5.5 V	1 \bar{G}		20	μ A			
		"	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		"	2 \bar{G}		"	"		
	I _{IH2}	"	69	7.0 V										"										"	1 \bar{G}		100	"		
		"	70		7.0 V									"										"	1A1		"	"		
		"	71			7.0 V								"										"	1A2		"	"		
		"	72				7.0 V						"											"	1A3		"	"		
		"	73									7.0 V		"										"	1A4		"	"		
		"	74											"	7.0 V									"	2A1		"	"		
		"	75											"		7.0 V								"	2A2		"	"		
		"	76											"			7.0 V							"	2A3		"	"		
		"	77											"						7.0 V				"	2A4		"	"		
		"	78											"								7.0 V		"	2 \bar{G}		"	"		
	I _{o 2/}	3011	79	GND	GND									"									2.25 V		"	1Y1	-30 3/	-112 3/	mA	
			80	"			GND							"									2.25 V		"	1Y2		"	"	
			81	"				GND						"										2.25 V		"	1Y3		"	"
			82	"								GND		"			2.25 V								"	1Y4		"	"	
			83	"									GND		"										"	2Y1		"	"	
			84	"										2.25 V	"										"	2Y2		"	"	
			85	"					2.25 V						"						GND				"	2Y3		"	"	
			86	"			2.25 V								"										"	2Y4		"	"	
	I _{CC1}	3005	87	GND	GND		GND		GND		GND		"	GND		GND		GND		GND		GND		"	V _{CC}			10	mA	
I _{CC1}	"	88	GND	5.5 V		5.5 V		5.5 V		5.5 V		"	5.5 V		5.5 V		5.5 V		5.5 V		5.5 V		"	"			23	"		
I _{CC2}	"	89	5.5 V									"										5.5 V	"	"				25	"	
V _{Ic}	"	90	-18 mA										"										4.5 V	1 \bar{G}		-1.5	V			
		91		-18 mA									"										"	1A1		"	"			
		92			-18 mA								"										"	1A2		"	"			
		93				-18 mA							"										"	1A3		"	"			
		94										-18 mA		"									"	1A4		"	"			
		95												"	-18 mA								"	2A1		"	"			
		96												"		-18 mA							"	2A2		"	"			
		97												"						-18 mA			"	2A3		"	"			
		98												"									-18 mA	"	2A4		"	"		
		99												"									-18 mA	"	2 \bar{G}		"	"		
		2	Same tests, terminal conditions, and limits as for subgroup 1, except T _c = +125°C and V _{Ic} tests are omitted.																											
3	Same tests, terminal conditions, and limits as for subgroup 1, except T _c = -55°C and V _{Ic} tests are omitted.																													
7 4/ T _c = 25°C	Truth table test	3014	100	B	B	H	B	H	B	H	B	H	GND	B	H	B	H	B	H	B	H	B	H	5.0 V	5/					
		3014	101	B	A	L	A	L	A	L	A	L	A	L	GND	A	L	A	L	A	L	A	L	B	5.0 V					
8	Same tests, terminal conditions, and limits as for subgroup 7, except T _c = +125°C and T _c = -55°C.																													

See footnotes at end of table.

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	Cases R,S,X,2 Test 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 \bar{G}	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y4	2A2	1Y3	2A3	1Y2	2A4	1Y1	2 \bar{G}	V _{CC}	1A1	1Y1	3	9		ns		
9 T _c = 25°C	t _{PLH1}	3003 see fig. 3	102	GND	IN								GND									OUT		5.0 V	1A1	1Y1	3	9	ns		
			103	"			IN							"									OUT		"	1A2	1Y2	"	"	"	
			104	"						IN				"											"	"	1A3	1Y3	"	"	"
			105	"									IN		"		OUT								"	"	1A4	1Y4	"	"	"
			106	"										OUT	"	IN								GND	"	"	2A1	2Y1	"	"	"
			107	"								OUT		OUT	"				IN						"	"	2A2	2Y2	"	"	"
			108	"							OUT				"						IN				"	"	2A3	2Y3	"	"	"
			109	"				OUT							"							IN			"	"	2A4	2Y4	"	"	"
			110	GND	IN																			OUT		"	1A1	1Y1	2	9	"
	111	"					IN						"									OUT		"	1A2	1Y2	"	"	"		
	112	"								IN			"											"	1A3	1Y3	"	"	"		
	113	"										IN	"			OUT								"	1A4	1Y4	"	"	"		
	114	"											OUT	"	IN								GND	"	"	2A1	2Y1	"	"	"	
	115	"															IN						"	"	2A2	2Y2	"	"	"		
	116	"								OUT		OUT		"						IN			"	"	"	2A3	2Y3	"	"	"	
	117	"					OUT						"										"	"	2A4	2Y4	"	"	"		
	118	IN	4.5 V										"									OUT		"	1 \bar{G}	1Y1	5	18	"		
	119	"					4.5 V						"									OUT		"	1 \bar{G}	1Y2	"	"	"		
	120	"								4.5 V			"					OUT						"	1 \bar{G}	1Y3	"	"	"		
	121	"										4.5 V	"			OUT								"	1 \bar{G}	1Y4	"	"	"		
	122	"											OUT	"	4.5 V								IN	"	2 \bar{G}	2Y1	"	"	"		
	123	"										OUT					4.5 V						"	"	2 \bar{G}	2Y2	"	"	"		
	124	"						OUT											4.5 V				"	"	2 \bar{G}	2Y3	"	"	"		
	125	"					OUT														4.5 V		"	"	2 \bar{G}	2Y4	"	"	"		
	126	IN	GND																			OUT		"	1 \bar{G}	1Y1	5	13	"		
	127	"						GND																"	1 \bar{G}	1Y2	"	"	"		
	128	"								GND														"	1 \bar{G}	1Y3	"	"	"		
	129	"										GND				OUT								"	1 \bar{G}	1Y4	"	"	"		
	130	"											OUT	"	GND									"	2 \bar{G}	2Y1	"	"	"		
	131	"										OUT					GND							"	2 \bar{G}	2Y2	"	"	"		
	132	"																		GND				"	2 \bar{G}	2Y3	"	"	"		
	133	"																				GND		"	2 \bar{G}	2Y4	"	"	"		
	134	IN	4.5 V																			OUT		"	1 \bar{G}	1Y1	3	12	"		
	135	"						4.5 V																"	1 \bar{G}	1Y2	"	"	"		
	136	"								4.5 V														"	1 \bar{G}	1Y3	"	"	"		
	137	"										4.5 V				OUT								"	1 \bar{G}	1Y4	"	"	"		
	138	"											OUT	"	4.5 V									"	2 \bar{G}	2Y1	"	"	"		
	139	"										OUT					4.5 V							"	2 \bar{G}	2Y2	"	"	"		
	140	"								OUT														"	2 \bar{G}	2Y3	"	"	"		
	141	"						OUT																"	2 \bar{G}	2Y4	"	"	"		

See footnotes at end of table.

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	Cases R,S,X,2 Test 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 \bar{G}	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y4	2A2	1Y3	2A3	1Y2	2A4	1Y1	2 \bar{G}	V _{CC}		Min	Max				
9	t _{PHZ}	3003 see fig. 3	142	IN	GND								GND									OUT		5.0 V	1 \bar{G}	1Y1	2	10	ns	
			143	"		GND								"						OUT				"	1 \bar{G}	1Y2	"	"	"	
			144	"					GND					"					OUT						"	1 \bar{G}	1Y3	"	"	"
			145	"							GND			"			OUT								"	1 \bar{G}	1Y4	"	"	"
			146	"									GND	OUT	"	GND								IN	"	2 \bar{G}	2Y1	"	"	"
			147	"										OUT	"			GND							"	2 \bar{G}	2Y2	"	"	"
			148	"						OUT				"						GND				"	"	2 \bar{G}	2Y3	"	"	"
			149	"			OUT							"											"	2 \bar{G}	2Y4	"	"	"
10	t _{PLH1}	Same tests and terminal conditions as for subgroup 9, except T _C = +125 °C and limits are as shown.																						3	12	"				
	t _{PHL1}																							2	11	"				
	t _{PZL}																							5	20	"				
	t _{PZH}																							5	15	"				
	t _{PLZ}																							3	18	"				
11	t _{PHZ}	Same tests, terminal conditions and limits as for subgroup 10, except T _C = -55°C.																						2	12	"				

1/ I_L limits shall be as follows:

Test	Min/Max limits in μ A for circuit		
	A	B	C
I _L	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_O limits shall be -20 mA min/-112 mA max for circuit A and -30 mA min/-110 mA max for circuit C.

4/ A ≥ 2.0 V and B ≤ 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 ≥ 1.5 V and L ≤ 1.5 V when using a high speed checker single comparator.

TABLE III. Group A inspection for device types 02.
Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.8 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases R,S,X,2 Test 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 \bar{G}	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y4	2A2	1Y3	2A3	1Y2	2A4	1Y1	2G	V _{CC}		Min	Max						
1 T _c = 25°C	V _{OH1}	3006	1	0.8 V	2.0 V									GND										4.5 V	1Y1	2.4		V				
			2	"			2.0 V																			1Y2	"		"			
			3	"						2.0 V																	1Y3	"		"		
			4	"									2.0 V														1Y4	"		"		
			5	"																					2.0 V		2Y1	"		"		
			6	"																							2Y2	"		"		
			7	"																							2Y3	"		"		
			8	"																							2Y4	"		"		
	V _{OH2}	"	"	9	0.8 V	2.0 V																					1Y1	2.0		"		
				10	"			2.0 V																				1Y2	"		"	
				11	"					2.0 V																			1Y3	"		"
				12	"								2.0 V																1Y4	"		"
				13	"																					2.0 V		2Y1	"		"	
				14	"																								2Y2	"		"
				15	"																								2Y3	"		"
				16	"																								2Y4	"		"
	V _{OL1}	3007	"	17	0.8 V	0.8 V																					1Y1		0.4	"		
				18	"			0.8 V																				1Y2			"	
				19	"						0.8 V																		1Y3			"
				20	"							0.8 V																	1Y4			"
				21	"										12 mA		0.8 V									2.0 V		2Y1				"
				22	"																								2Y2			"
				23	"																								2Y3			"
				24	"																								2Y4			"
	V _{OL2}	"	"	25	0.8 V	0.8 V																						1Y1		0.45	"	
				26	"			0.8 V																				1Y2			"	
				27	"					0.8 V																			1Y3			"
				28	"							0.8 V																	1Y4			"
				29	"																								2Y1			"
				30	"																								2Y2			"
				31	"																								2Y3			"
				32	"																								2Y4			"
	I _{ozH}	"	"	33	2.0 V																							1Y1		20	μ A	
				34	"																							1Y2			"	
				35	"																								1Y3			"
				36	"																								1Y4			"
				37	"																								2Y1			"
				38	"																								2Y2			"
				39	"																								2Y3			"
				40	"																								2Y4			"
	I _{ozL}	"	"	41	2.0 V																							1Y1		-20	"	
				42	"																							1Y2			"	
				43	"																							1Y3			"	
				44	"																							1Y4			"	
				45	"																								2Y1			"
				46	"																								2Y2			"
				47	"																								2Y3			"
				48	"																								2Y4			"
	I _L	3009	"	49	0.4 V																						1 \bar{G}	1/	1/	"		
				50		0.4 V																						1A1			"	
				51			0.4 V																						1A2			"
				52				0.4 V																					1A3			"
				53					0.4 V																				1A4			"
				54						0.4 V																			2A1			"
				55							0.4 V																		2A2			"
				56								0.4 V																	2A3			"
				57									0.4 V																2A4			"
				58										0.4 V															2G			"

See footnotes at end of table.

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

Subgroup	Symbol	MIL-STD-883 method	Cases R,S,X,2	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 G	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y4	2A2	1Y3	2A3	1Y2	2A4	1Y1	2G	V _{CC}		Min	Max				
1 T _c = 25°C	I _{H1}	3010	59	2.7 V									GND										5.5 V	1 G		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				2G					
	69	I _{H2}		7.0 V																					1 G		100			
	70				7.0 V																				1A1					
	71					7.0 V																			1A2					
	72						7.0 V																		1A3					
	73																								1A4					
	74															7.0 V									2A1					
	75																	7.0 V							2A2					
	76																			7.0 V					2A3					
	77																					7.0 V			2A4					
	78																						7.0 V		2G					
	79	I _{O 5/}	3011	GND	5.5 V																		2.25 V		1Y1	-30 3/	-112 3/	mA		
	80							5.5 V															2.25 V		1Y2					
	81									5.5 V															1Y3					
	82																2.25 V								1Y4					
	83																								2Y1					
	84																							4/	2Y2					
	85																								2Y3					
	86																								2Y4					
	87	I _{CCH}	3005	GND	5.5 V			5.5 V				5.5 V			5.5 V				5.5 V						5.5 V			17		
88	I _{CC1}		GND	GND			GND				GND			GND				GND									28			
89	I _{CC2}		5.5 V																								32			
90	V _{Ic}		-18 mA																					4.5 V	1G		-1.5			
91				-18 mA																					1A1					
92																									1A2					
93																									1A3					
94																									1A4					
95																									2A1					
96																									2A2					
97																									2A3					
98																									2A4					
99																									2G					
2	Same tests, terminal conditions, and limits as for subgroup 1, except T _c = +125°C, V _{Ic} tests are omitted, and V _{I1} = +0.7 V.																													
3	Same tests, terminal conditions, and limits as for subgroup 1, except T _c = -55°C and V _{Ic} tests are omitted.																													
7 5/ T _c = 25°C	Truth table test	3014 3014	100 101	B B	B A	L H	B A	L H	B A	L H	B A	L H	GND GND	B A	L H	B A	L H	B A	L H	B A	L H	A A	5.0 V 5.0 V	6/						
8	Same tests, terminal conditions, and limits as for subgroup 7, except T _c = +125°C and T _c = -55°C.																													

See footnotes at end of table.

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

Subgroup	Symbol	MIL-STD-883 method	Cases R,S,X,2	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 \bar{G}	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y4	2A2	1Y3	2A3	1Y2	2A4	1Y1	2G	V _{CC}		Min	Max			
9 T _c = 25°C	t _{PLH1}	3003 see fig. 3	102	GND	IN								GND								OUT		5.0 V	1A1 1Y1	3	11	ns		
			103	"			IN							"										"	1A2 1Y2	"	"	"	
			104	"					IN																"	1A3 1Y3	"	"	"
			105	"							IN					IN		OUT							"	1A4 1Y4	"	"	"
			106	"																					"	2A1 2Y1	"	"	"
			107	"								OUT				OUT								4/	"	2A2 2Y2	"	"	"
			108	"								OUT													"	2A3 2Y3	"	"	"
			109	"				OUT																	"	2A4 2Y4	"	"	"
			110	GND	IN																			IN		"	1A1 1Y1	3	12
	111	"				IN																		"	1A2 1Y2	"	"	"	
	112	"								IN														"	1A3 1Y3	"	"	"	
	113	"										IN				OUT								"	1A4 1Y4	"	"	"	
	114	"																						"	2A1 2Y1	"	"	"	
	115	"									OUT												4/	"	2A2 2Y2	"	"	"	
	116	"									OUT													"	2A3 2Y3	"	"	"	
	117	"				OUT																		"	2A4 2Y4	"	"	"	
	118	IN	GND																					"	1 G 1Y1	5	15	"	
	119	"				GND																		"	1 G 1Y2	"	"	"	
	120	"							GND															"	1 G 1Y3	"	"	"	
	121	"										GND					OUT							"	1 G 1Y4	"	"	"	
	122	"											OUT		GND									"	2G 2Y1	"	"	"	
	123	"									OUT													"	2G 2Y2	"	"	"	
	124	"									OUT													"	2G 2Y3	"	"	"	
	125	"					OUT		OUT															"	2G 2Y4	"	"	"	
	126	IN	4.5 V																					"	1 G 1Y1	5	15	"	
	127	"					4.5 V																	"	1 G 1Y2	"	"	"	
	128	"							4.5 V									OUT						"	1 G 1Y3	"	"	"	
	129	"										4.5 V					OUT							"	1 G 1Y4	"	"	"	
	130	"											OUT		4.5 V									"	2G 2Y1	"	"	"	
	131	"														4.5 V								"	2G 2Y2	"	"	"	
	132	"									OUT									4.5 V				"	2G 2Y3	"	"	"	
	133	"					OUT															4.5 V		"	2G 2Y4	"	"	"	
	134	IN	GND																					"	1 G 1Y1	2	10	"	
	135	"					GND																	"	1 G 1Y2	"	"	"	
	136	"								GND														"	1 G 1Y3	"	"	"	
	137	"										GND					OUT							"	1 G 1Y4	"	"	"	
	138	"											OUT		GND									"	2G 2Y1	"	"	"	
	139	"									OUT													"	2G 2Y2	"	"	"	
	140	"							OUT															"	2G 2Y3	"	"	"	
	141	"					OUT																	"	2G 2Y4	"	"	"	

See footnotes at end of table.

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

Subgroup	Symbol	MIL-STD-883 method	Cases R,S,X,2	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.	1 \bar{G}	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y2	2A4	1Y3	2A3	1Y2	2A4	1Y1	2G		V _{CC}	Min		Max	
9	t _{PHZ}	3003 see fig. 3	142	IN	4.5 V								GND									OUT		5.0 V	1 \bar{G} 1Y1	2	10	ns	
			143	"			4.5 V							"						OUT				"	1 \bar{G} 1Y2	"	"	"	
			144	"						4.5 V				"					OUT						"	1 \bar{G} 1Y3	"	"	"
			145	"									4.5 V		"		OUT								"	1 \bar{G} 1Y4	"	"	"
			146											OUT	"	4.5 V								IN	"	2G 2Y1	"	"	"
			147														4.5 V							"	"	2G 2Y2	"	"	"
			148								OUT										4.5 V				"	2G 2Y3	"	"	"
			149					OUT							"										"	2G 2Y4	"	"	"
10	t _{PLH1}	Same tests and terminal conditions as for subgroup 9, except T _C = +125 °C and limits are as shown.																					3	13	"				
	t _{PHL1}																						3	14	"				
	t _{PZL}																						5	18	"				
	t _{PZH}																						5	18	"				
	t _{PLZ}																						2	12	"				
	t _{PHZ}																						2	12	"				
11	Same tests, terminal conditions and limits as for subgroup 10, except T _C = -55°C.																												

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

Test	Min/Max limits in μ A 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_O limits shall be -20 mA min/-112 mA max for circuit A and -30 mA min/-110 mA max for circuit C.

4/ Apply 3.0 V min/5.5 V max.

5/ A ≥ 2.0 V and B ≤ 0.8 V.

6/ Output voltages shall be either:

- H = 2.4 V minimum and L = 0.4 V maximum when using a high speed checker double comparator, or
- H ≥ 1.5 V and L ≤ 1.5 V when using a high speed checker single comparator.

TABLE III. Group A inspection for device type 03.
Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.8 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases R,S,X,2 Test 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 \bar{G}	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y4	2A2	1Y3	2A3	1Y2	2A4	1Y1	2 \bar{G}	V _{CC}		Min	Max							
1 T _c = 25°C	V _{OH1}	3006	1	0.8 V	2.0 V									GND									2 \bar{G}	V _{CC}	1Y1	2.4		V					
			2	"			2.0 V																			1Y2	"		"				
			3	"						2.0 V																	1Y3	"		"			
			4	"									2.0 V														1Y4	"		"			
			5	"																					0.8 V		2Y1	"		"			
			6	"																							2Y2	"		"			
			7	"																							2Y3	"		"			
			8	"																							2Y4	"		"			
	V _{OH2}	"	"	9	0.8 V	2.0 V																					1Y1	2.0		"			
				10	"			2.0 V																				1Y2	"		"		
				11	"					2.0 V																			1Y3	"		"	
				12	"								2.0 V																1Y4	"		"	
				13	"																						0.8 V		2Y1	"		"	
				14	"																								2Y2	"		"	
				15	"																								2Y3	"		"	
				16	"																								2Y4	"		"	
	V _{OL1}	3007	"	17	0.8 V	0.8 V																					1Y1		0.4	"			
				18	"				0.8 V																			1Y2			"		
				19	"						0.8 V																		1Y3			"	
				20	"							0.8 V																	1Y4			"	
				21	"									12 mA			0.8 V											0.8 V		2Y1			"
				22	"										12 mA															2Y2			"
				23	"											12 mA														2Y3			"
				24	"																								2Y4			"	
	V _{OL2}	"	"	25	0.8 V	0.8 V																						1Y1		0.45	"		
				26	"				0.8 V																				1Y2			"	
				27	"						0.8 V																			1Y3			"
				28	"								0.8 V																	1Y4			"
				29	"																									2Y1			"
				30	"																									2Y2			"
				31	"																									2Y3			"
				32	"																									2Y4			"
	I _{ozH}	"	"	33	2.0 V																							1Y1		20	μ A		
				34	"																								1Y2			"	
				35	"																									1Y3			"
				36	"																									1Y4			"
				37	"																									2Y1			"
				38	"																									2Y2			"
				39	"																									2Y3			"
				40	"																									2Y4			"
	I _{ozL}	"	"	41	2.0 V																							1Y1		-20	"		
				42	"																								1Y2			"	
				43	"																									1Y3			"
				44	"																									1Y4			"
				45	"																									2Y1			"
				46	"																									2Y2			"
				47	"																									2Y3			"
				48	"																									2Y4			"
	I _L	3009	"	49	0.4 V																							1 \bar{G}	1/	1/	"		
				50		0.4 V																							1A1			"	
				51			0.4 V																							1A2			"
				52				0.4 V																						1A3			"
				53					0.4 V																					1A4			"
				54						0.4 V																				2A1			"
				55							0.4 V																			2A2			"
				56								0.4 V																		2A3			"
				57									0.4 V																	2A4			"
				58										0.4 V																	2 \bar{G}		

See footnotes at end of table.

TABLE III. Group A inspection for type 03 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.8 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases R,S,X,2 Test 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 \bar{G}	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y4	2A2	1Y3	2A3	1Y2	2A4	1Y1	2 \bar{G}	V _{CC}		Min	Max							
1 T _c = 25°C	I _{IH1}	3010	59	2.7 V										GND									5.5 V	1 \bar{G}		20	μ A						
			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				2 \bar{G}							
	I _{IH2}			69	7.0 V																					1 \bar{G}		100					
				70		7.0 V																						1A1					
				71			7.0 V																						1A2				
				72				7.0 V																					1A3				
				73								7.0 V																		1A4			
				74										7.0 V															2A1				
				75														7.0 V											2A2				
				76																	7.0 V								2A3				
				77																			7.0 V						2A4				
				78																					7.0 V				2 \bar{G}				
	I _{o 5/}	3011	79	GND	5.5 V																					1Y1	-30 3/	-112 3/	mA				
			80	"			5.5 V														2.25 V		2.25 V				1Y2						
			81	"					5.5 V																			1Y3					
			82	"								5.5 V					2.25 V												1Y4				
			83	"									2.25 V			5.5 V								GND					2Y1				
			84	"										2.25 V															2Y2				
			85	"					2.25 V												5.5 V								2Y3				
			86	"			2.25 V																						2Y4				
	I _{CC1}	3005	87	GND	5.5 V		5.5 V		5.5 V		5.5 V		5.5 V		5.5 V		5.5 V		5.5 V		5.5 V		5.5 V			V _{CC}		18					
I _{CC2}	"	88	GND	GND		GND		GND		GND		GND		GND		GND		GND		GND		GND						25					
I _{CCZ}	"	89	5.5 V																			5.5 V						29					
V _{Ic}			90	-18 mA																			4.5 V	1 \bar{G}		-1.5	V						
			91		-18 mA																						1A1						
			92			-18 mA																						1A2					
			93				-18 mA																					1A3					
			94					-18 mA																				1A4					
			95									-18 mA																2A1					
			96														-18 mA											2A2					
			97																			-18 mA						2A3					
			98																									2A4					
			99																					-18 mA									
			2	Same tests, terminal conditions, and limits as for subgroup 1, except T _c = +125°C, V _{Ic} tests are omitted, and V _{I1} = +0.7 V.																													
3	Same tests, terminal conditions, and limits as for subgroup 1, except T _c = -55°C and V _{Ic} tests are omitted.																																
7 4/ T _c = 25°C	Truth table test	3014	100	B	B	L	B	L	B	L	B	L	GND	B	L	B	L	B	L	B	L	B	L	B	L	B	5.0 V	5/					
		3014	101	B	A	H	A	H	A	H	A	H	A	H	GND	A	H	A	H	A	H	A	H	A	H	B	5.0 V						
8	Same tests, terminal conditions, and limits as for subgroup 7, except T _c = +125°C and T _c = -55°C.																																

See footnotes at end of table.

TABLE III. Group A inspection for type 03 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.8 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases R,S,X,2 Test 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 \bar{G}	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y4	2A2	1Y3	2A3	1Y2	2A4	1Y1	2 \bar{G}	V _{CC}		Min	Max			
9 T _c = 25°C	t _{PLH1}	3003 see fig. 3	102	GND	IN								GND									2 \bar{G}	V _{CC}	1A1 1Y1	2	11	ns		
			103	"			IN																		1A2 1Y2	"	"	"	
			104	"						IN																1A3 1Y3	"	"	"
			105	"									IN				OUT									1A4 1Y4	"	"	"
			106	"										OUT		IN								GND		2A1 2Y1	"	"	"
			107	"									OUT						IN							2A2 2Y2	"	"	"
			108	"						OUT											IN					2A3 2Y3	"	"	"
			109	"				OUT														IN				2A4 2Y4	"	"	"
			110	GND	IN																			OUT		1A1 1Y1	3	12	"
	111	"				IN																	OUT		1A2 1Y2	"	"	"	
	112	"						IN																OUT		1A3 1Y3	"	"	"
	113	"											IN			OUT									1A4 1Y4	"	"	"	
	114	"												OUT		IN							GND		2A1 2Y1	"	"	"	
	115	"															IN								2A2 2Y2	"	"	"	
	116	"							OUT		OUT									IN					2A3 2Y3	"	"	"	
	117	"					OUT																		2A4 2Y4	"	"	"	
	118	IN	GND																			OUT			1 \bar{G} 1Y1	2	15	"	
	119	"					GND																		1 \bar{G} 1Y2	"	"	"	
	120	"							GND									OUT							1 \bar{G} 1Y3	"	"	"	
	121	"									GND					OUT									1 \bar{G} 1Y4	"	"	"	
	122	"											OUT		GND								IN		2 \bar{G} 2Y1	"	"	"	
	123	"									OUT							GND							2 \bar{G} 2Y2	"	"	"	
	124	"						OUT											GND						2 \bar{G} 2Y3	"	"	"	
	125	"					OUT														GND				2 \bar{G} 2Y4	"	"	"	
	126	IN	4.5 V																			OUT			1 \bar{G} 1Y1	2	15	"	
	127	"					4.5 V																		1 \bar{G} 1Y2	"	"	"	
	128	"							4.5 V									OUT							1 \bar{G} 1Y3	"	"	"	
	129	"									4.5 V					OUT									1 \bar{G} 1Y4	"	"	"	
	130	"											OUT		4.5 V									IN	2 \bar{G} 2Y1	"	"	"	
	131	"										OUT						4.5 V							2 \bar{G} 2Y2	"	"	"	
	132	"																	4.5 V						2 \bar{G} 2Y3	"	"	"	
	133	"					OUT														4.5 V				2 \bar{G} 2Y4	"	"	"	
	134	IN	GND																				OUT		1 \bar{G} 1Y1	1	10	"	
	135	"					GND																		1 \bar{G} 1Y2	"	"	"	
	136	"							GND																1 \bar{G} 1Y3	"	"	"	
	137	"										GND				OUT									1 \bar{G} 1Y4	"	"	"	
	138	"											OUT		GND									IN	2 \bar{G} 2Y1	"	"	"	
	139	"															GND								2 \bar{G} 2Y2	"	"	"	
	140	"							OUT																2 \bar{G} 2Y3	"	"	"	
	141	"						OUT																	2 \bar{G} 2Y4	"	"	"	

See footnotes at end of table.

TABLE III. Group A inspection for type 03 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.8 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases R,S,X,2 Test 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			
				$1 \bar{G}$	1A1	2Y4	1A2	2Y3	1A3	2Y2	1A4	2Y1	GND	2A1	1Y2	2A4	1Y3	2A3	1Y2	2A4	1Y1	$2 \bar{G}$	V _{CC}		Min	Max				
9	t _{PHZ}	3003 see fig. 3	142	IN	4.5 V								GND										OUT		5.0 V	$1 \bar{G}$	1Y1	2	10	ns
			143	"			4.5 V							"											"	$1 \bar{G}$	1Y2	"	"	"
			144	"						4.5 V				"					OUT						"	$1 \bar{G}$	1Y3	"	"	"
			145	"									4.5 V		"		OUT								"	$1 \bar{G}$	1Y4	"	"	"
			146	"										OUT	"	4.5 V								IN	"	$2 \bar{G}$	2Y1	"	"	"
			147	"											OUT	"		4.5 V						"	"	$2 \bar{G}$	2Y2	"	"	"
			148	"							OUT				"						4.5 V			"	"	$2 \bar{G}$	2Y3	"	"	"
			149	"				OUT							"										4.5 V	"	$2 \bar{G}$	2Y4	"	"
10	t _{PLH1}	Same tests and terminal conditions as for subgroup 9, except T _C = +125 °C and limits are as shown.																							3	13	"			
	t _{PHL1}																								3	16	"			
	t _{PZL}																								4	18	"			
	t _{PZH}																								5	18	"			
	t _{PLZ}																								2	12	"			
	t _{PHZ}																								2	12	"			
11	Same tests, terminal conditions and limits as for subgroup 10, except T _C = -55°C.																													

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

Test	Min/Max limits in μ A 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_O limits shall be -20 mA min/-112 mA max for circuit A and -30 mA min/-110 mA max for circuit C.

4/ A ≥ 2.0 V and B ≤ 0.8 V.

5/ Output voltages shall be either:

- H = 2.4 V minimum and L = 0.4 V maximum when using a high speed checker double comparator, or
- H ≥ 1.5 V and L ≤ 1.5 V when using a high speed checker single comparator.

5. PACKAGING

5.1 Packaging requirements. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the military service's system command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

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 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of the specification.
- b. PIN and compliance identifier, if applicable (see 1.2).
- c. Requirements for delivery of one copy of the conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.
- d. Requirements for certificate of compliance, if applicable.
- e. Requirements for notification of change of product or process to contracting activity in addition to notification to the qualifying activity, if applicable.
- f. Requirements for failure analysis (including required test condition of method 5003 of MIL-STD-883), corrective action, and reporting of results, if applicable.
- g. Requirements for product assurance options.
- h. Requirements for special carriers, lead lengths, or lead forming, if applicable. These requirements should not affect the part number. Unless otherwise specified, these requirements will not apply to direct purchase by or direct shipment to the Government.
- i. Requirements for "JAN" marking.
- j. Packaging requirements (see 5.1).

6.3 Superseding information. The requirements of MIL-M-38510 have been superseded to take advantage of the available Qualified Manufacturer Listing (QML) system provided by MIL-PRF-38535. Previous references to MIL-M-38510 in this document have been replaced by appropriate references to MIL-PRF-38535. All technical requirements now consist of this specification and MIL-PRF-38535. The MIL-M-38510 specification sheet number and PIN have been retained to avoid adversely impacting existing government logistics systems and contractor's parts lists.

6.4 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List QML-38535 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from DSCC-VQ, 3990 E. Broad Street, Columbus, Ohio 43123-1199.

6.5 Abbreviations, symbols, and definitions. The abbreviations, symbols, and definitions used herein are defined in MIL-PRF-38535, MIL-HDBK-1331, and as follows:

GND	Ground zero voltage potential
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 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 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.

6.6 Logistic support. Lead materials and finishes (see 3.4) 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 A (see 3.4). Longer length leads and lead forming should not affect the part number.

6.7 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-35810 device types and may have slight physical variations in relation to case size. The presence of this information should 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-PRF-38535.

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

6.8 Manufacturers' designation. 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
	Texas Instruments	Motorola Inc.	National Semiconductor/ Fairchild Semiconductor
01	X		
02	X		
03	X		

6.9 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:
 Army - CR
 Navy - EC
 Air Force - 11
 DLA - CC

Preparing activity:
 DLA - CC
 (Project 5962-2070)

Review activities:
 Army - MI, SM
 Navy - AS, CG, MC, SH, TD
 Air Force - 03, 19, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <http://assist.daps.dla.mil>.