

INCH-POUND

MIL-M-38510/384A
8 November 2004
SUPERSEDING
MIL-M-38510/384(USAF)
7 December 1983

MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, BIPOLAR, ADVANCED LOW POWER SCHOTTKY TTL,
AND, OR, NAND AND NOR GATES, MONOLITHIC SILICON

Inactive for new design after 8 July 1997.

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, advanced low power Schottky TTL, positive AND, OR, NAND, and NOR logic gating microcircuits. 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 For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.3).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	Quadruple, 2-input NAND gate, buffer output
02	Quadruple, 2-input NOR gate, buffer output
03	Quadruple, 2-input NAND gate, open collector, buffer output
04	Quadruple, 2-input AND gate, buffer output
05	Triple 3-input NAND gate, buffer output
06	Triple 3-input AND gate, buffer output
07	Dual 4-input NAND gate, buffer output
08	Quadruple, 2-input OR gate, buffer output
09	Hex 1-input inverter gate, buffer output
10	Hex 1-input inverter gate, open collector, buffer output
11	Hex 1-input noninverting gate, buffer output
12	Hex 1-input noninverting gate, open collector, buffer output

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

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>.

1.2.3 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>
A	GDFP5-F14 or CDFP6-F14	14	Flat pack
B	GDFP4-14	14	Flat pack
C	GDIP1-T14 or CDIP2-T14	14	Dual-in-line
D	GDFP1-F14 or CDFP2-F14	14	Flat pack
2	CQCC1-N20	20	Square leadless chip carrier

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 (P_D), per device: <u>1/</u>	
Device 01, 03	35.2 mW dc
Device 02, 04	44 mW dc
Device 05, 06	33 mW dc
Device 07	17.6 mW dc
Device 08	55 mW dc
Device 09, 10	66 mW dc
Device 11, 12	77 mW dc
Lead temperature (soldering, 10 seconds)	+300°C
Thermal resistance, junction to case (θ_{JC}):	
Cases A, B, C, D, and 2	(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 dc
Maximum low level input voltage (V_{IL})	0.8 V dc
Case operating temperature range (T_C)	-55° 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.

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.

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.

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

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

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

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

3.4 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.

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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 _{OH}	V _{CC} = 4.5 V, V _{IH} = 2.0 V, I _{OH} = -1.0 mA, V _{IL} = 0.8 V	01, 02, 04 05, 06, 07 08, 09, 11	2.4		V dc
Low level output voltage	V _{OL}	V _{CC} = 4.5 V, I _{OL} = 12 mA, V _{IL} = 0.8 V, V _{IH} = 2.0 V	All		0.4	V dc
Input clamp voltage	V _{IC}	V _{CC} = 4.5 V, I _{IN} = -18 mA, T _C = +25°C	All		-1.5	V dc
Low level input current	I _{IL}	V _{CC} = 5.5 V, V _{IN} = 0.4 V	All	0	-100	μA
High level input current	I _{IH1}	V _{CC} = 5.5 V, V _{IN} = 2.7 V	All		20	μA
	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 _O = 2.25 V	01, 02, 04 05, 06, 07, 08	-15	-112	mA
			09	-30	-112	
			11	-20	-112	
Collector cut-off current	I _{CEX}	V _{CC} = 4.5 V, V _{IN} = 5.0 V, V _O = 5.5 V	03, 10, 12		100	μA
Supply current, outputs high	I _{CCH}	V _{CC} = 5.5 V	01, 03		1.6	mA
			02		2.8	
			04, 09, 10		3	
			05		1.2	
			06		2.3	
			07		0.8	
			11, 12		6	

See footnotes at end of table.

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 TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55°C ≤ T _C ≤ +125°C unless otherwise specified		Device type	Limits		Unit				
					Min	Max					
Supply current, outputs low	I _{CC} L	V _{CC} = 5.5 V		01, 03		7.8	mA				
				02		9.0					
				04		9.3					
				05		6.0					
				06		7.0					
				07		3.9					
				08		10.6					
				09, 10		12.0					
				11, 12		14.0					
Propagation delay time low-to-high level	t _{PLH}	V _{CC} = 5.0 V, C _L = 50 pF ±10%	R _L = 500 Ω	01, 02, 05 07, 11	2	10	ns				
				04	2	11					
				08	2	9					
				06	2	12					
				09	1	9					
			R _L = 680 Ω	03	10	40					
				10, 12	5	35					
			Propagation delay time high-to-low level	t _{PHL}	V _{CC} = 5.0 V, C _L = 50 pF ±10%	R _L = 500 Ω		01, 02, 05 07	2	7	ns
								04, 06	3	11	
08	3	12									
09	1	8									
11	1	10									
R _L = 680 Ω	03	2				12					
	10	2				12					
	12	2				14					

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, 9, 10, 11	1*, 2, 3, 9
Group A test requirements	1, 2, 3, 9, 10, 11	1, 2, 3, 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.

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.

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, 6, 7, and 8 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.

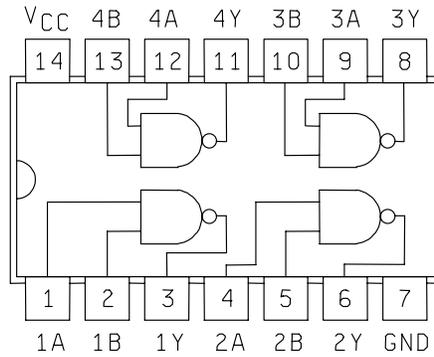
4.4.4 Group D inspection. Group D inspection shall be in accordance with table V of MIL-PRF-38535. End-point electrical parameters shall be as specified in table II herein.

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.

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DEVICE TYPES 01 AND 03
CASES A, B, C AND D



DEVICE TYPES 01 AND 03
CASE 2

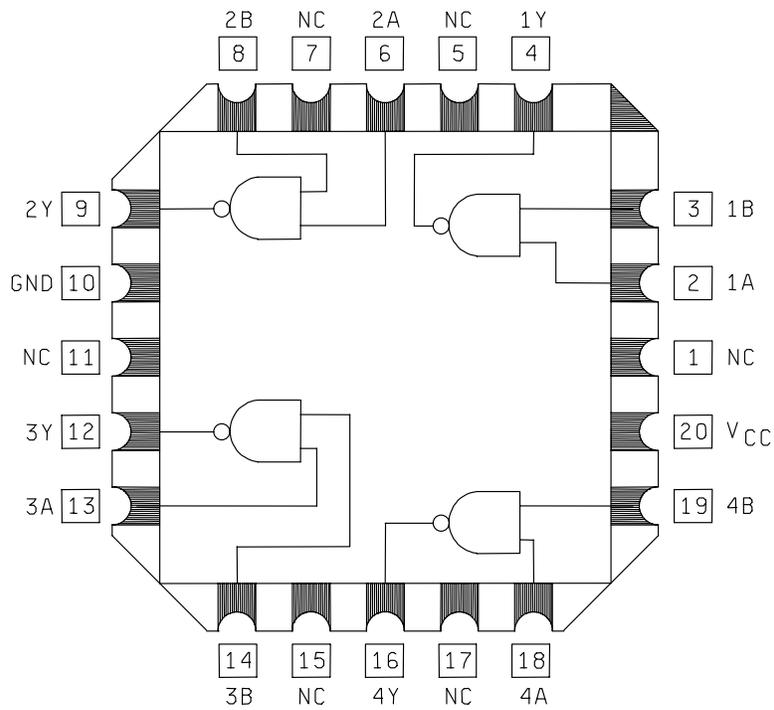
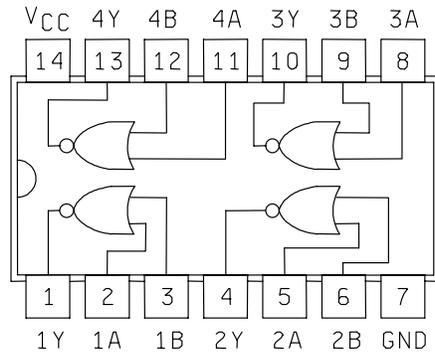


FIGURE 1. Logic diagram and terminal connections (top view).

DEVICE TYPE 02
CASES A, B, C, AND D



DEVICE TYPE 02
CASE 2

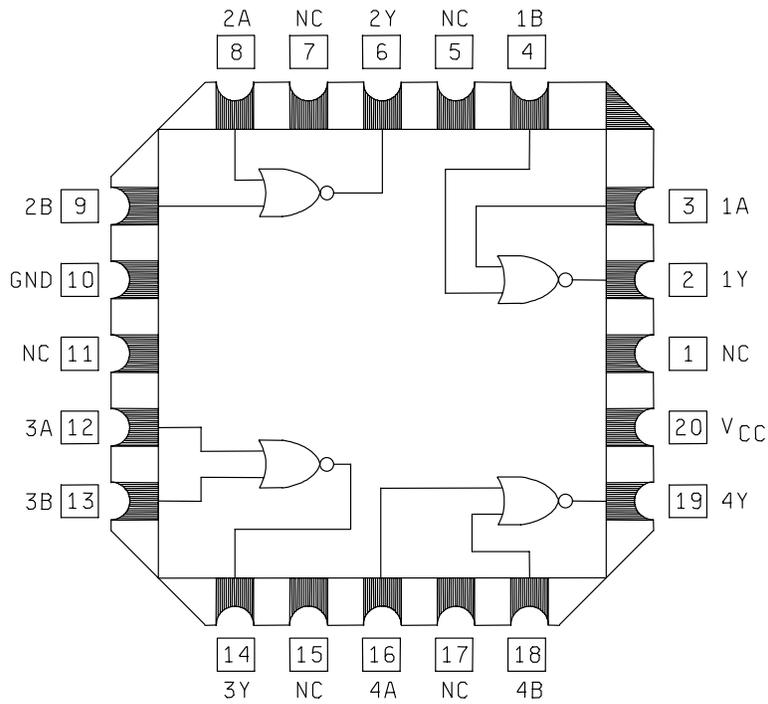
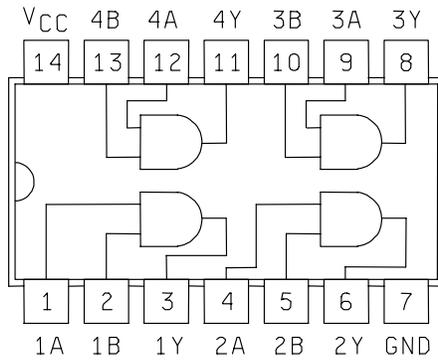


FIGURE 1. Logic diagram and terminal connections (top view) - Continued.

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DEVICE TYPE 04
CASES A, B, C AND D



DEVICE TYPE 04
CASE 2

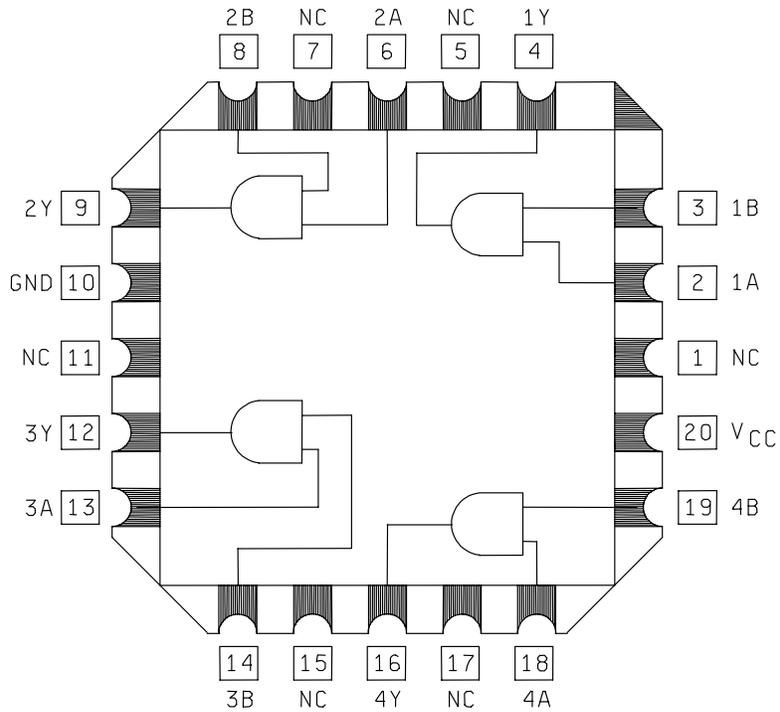
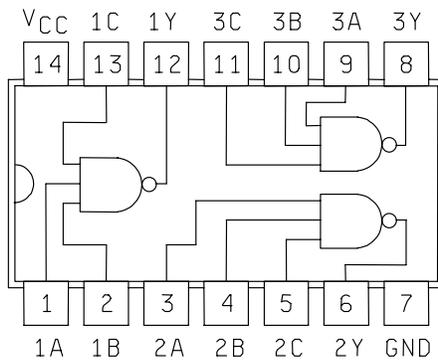


FIGURE 1. Logic diagram and terminal connections (top view) - Continued.

DEVICE TYPE 05
CASES A, B, C AND D



DEVICE TYPE 05
CASE 2

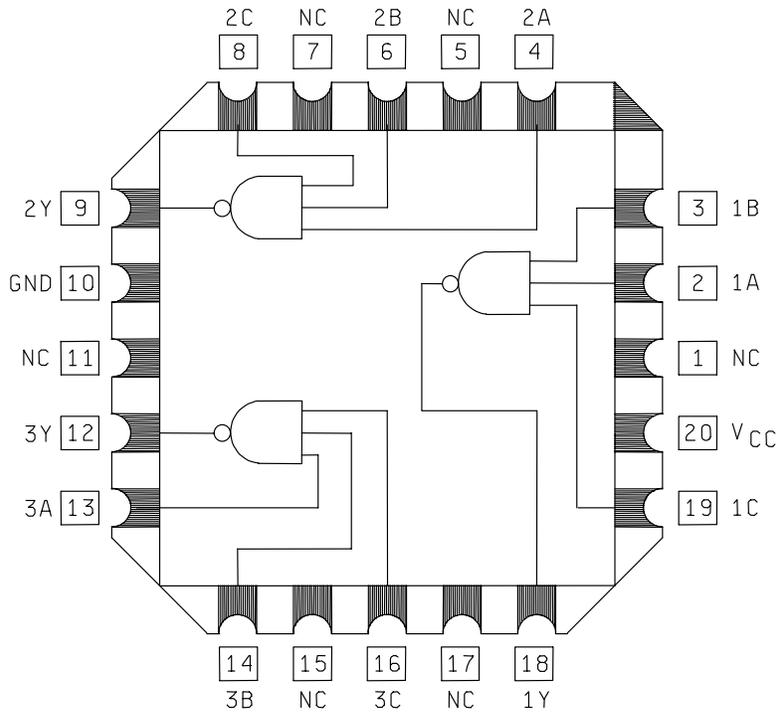
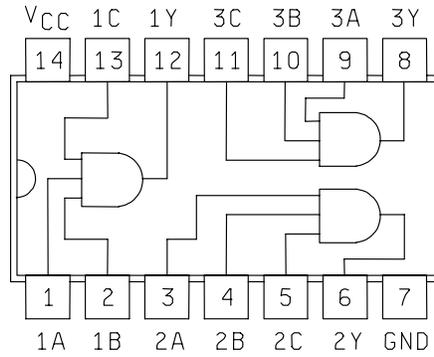


FIGURE 1. Logic diagram and terminal connections (top view) - Continued.

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DEVICE TYPE 06
CASES A,B,C AND D



DEVICE TYPE 06
CASE 2

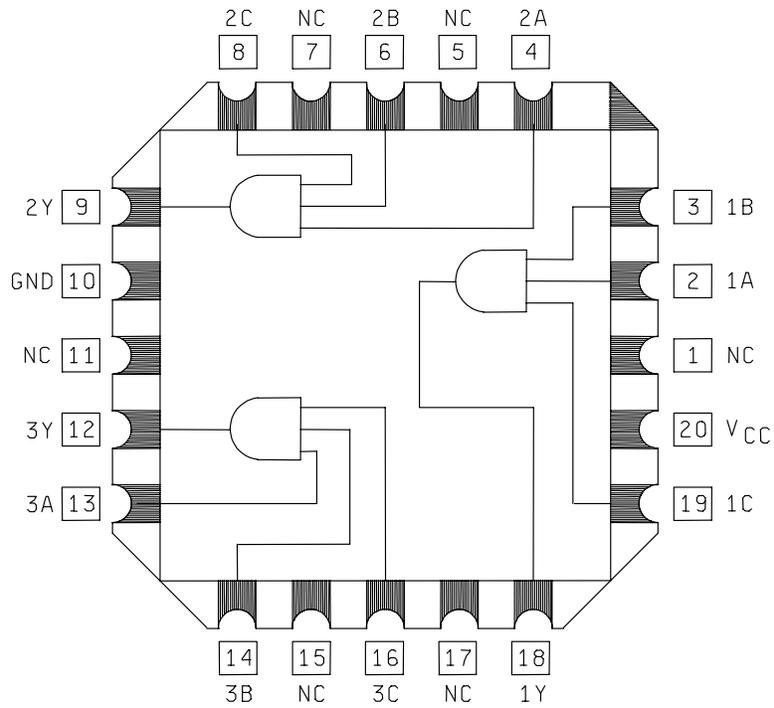
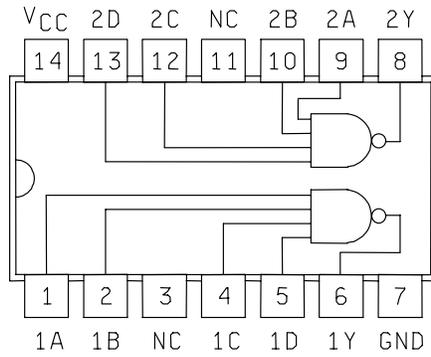


FIGURE 1. Logic diagram and terminal connections (top view) - Continued.

DEVICE TYPE 07
CASES A, B, C AND D



DEVICE TYPE 07
CASE 2

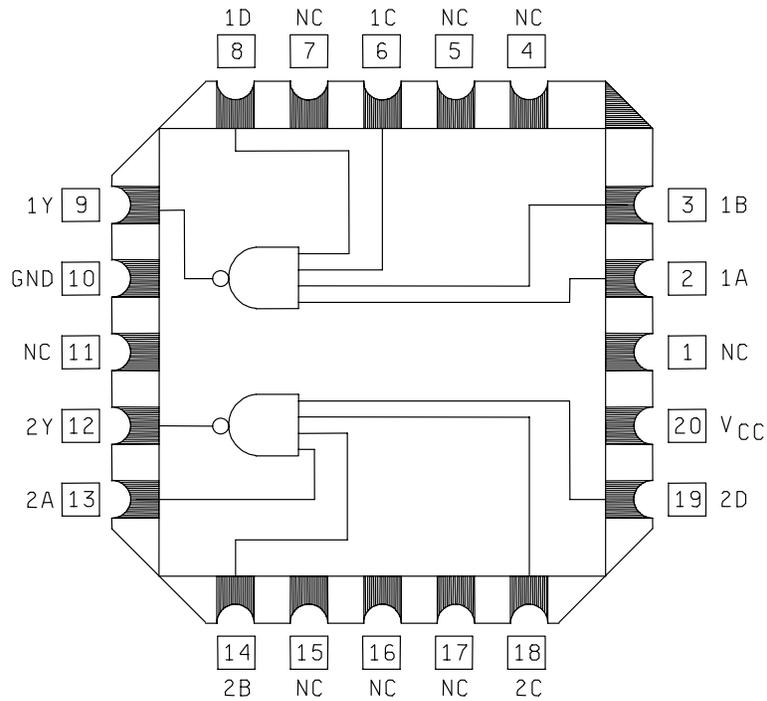
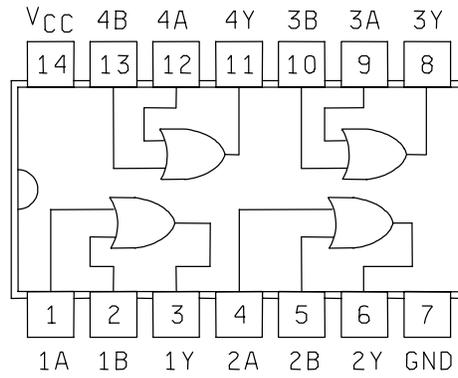


FIGURE 1. Logic diagram and terminal connections (top view) - Continued.

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DEVICE TYPE 08
CASES A, B, C, AND D



DEVICE TYPE 08
CASE 2

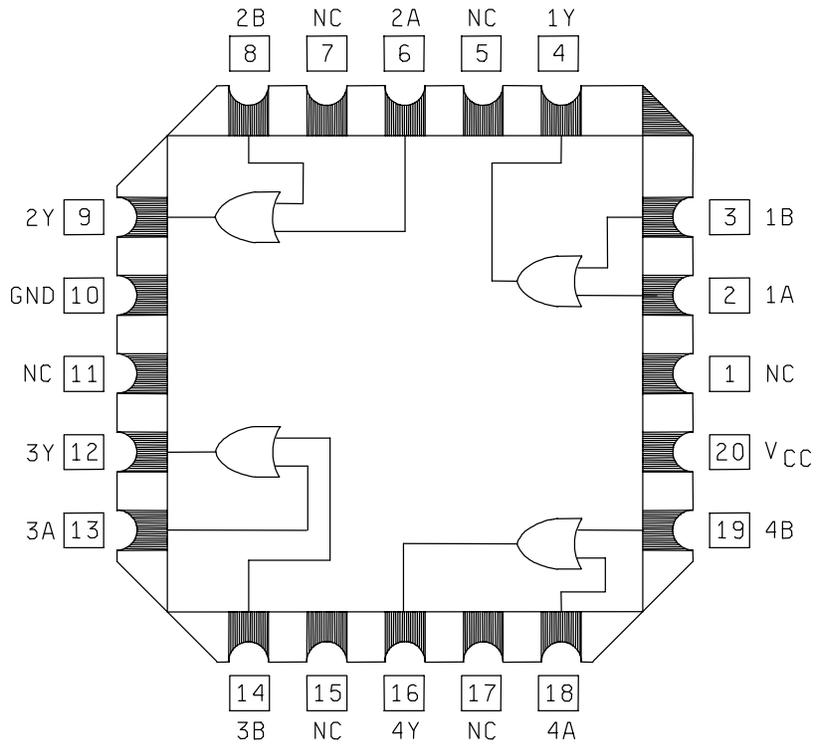
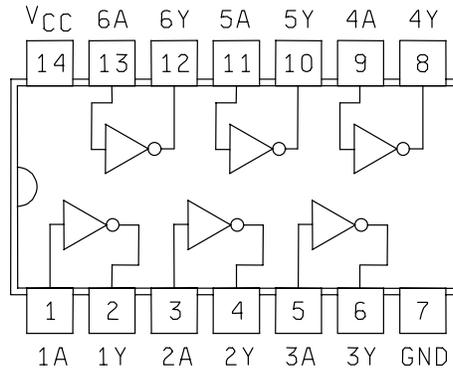


FIGURE 1. Logic diagram and terminal connections (top view) - Continued.

DEVICE TYPES 09 AND 10
CASES A, B, C AND D



DEVICE TYPES 09 AND 10
CASES 2

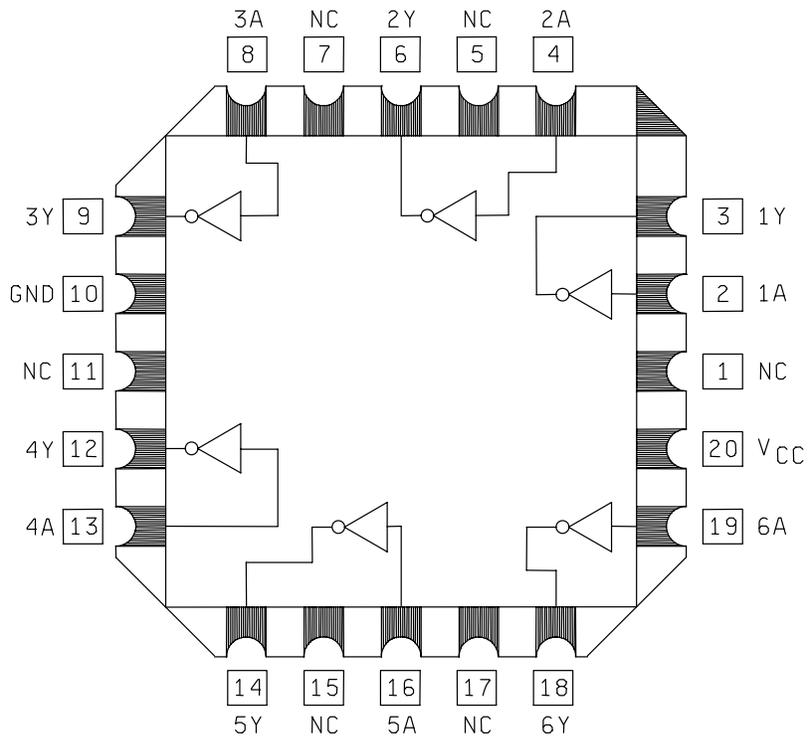
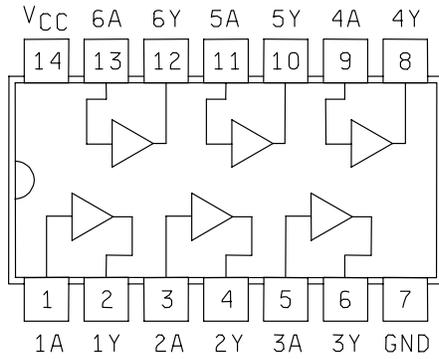


FIGURE 1. Logic diagram and terminal connections (top view) - Continued.

DEVICE TYPES 11 AND 12
CASES A, B, C AND D



DEVICE TYPES 11 AND 12
CASE 2

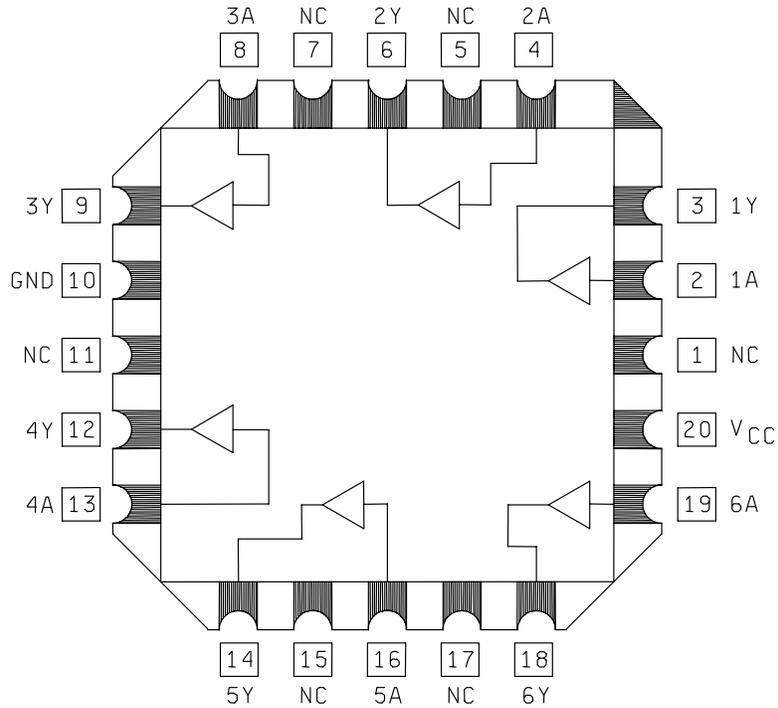


FIGURE 1. Logic diagram and terminal connections (top view) - Continued.

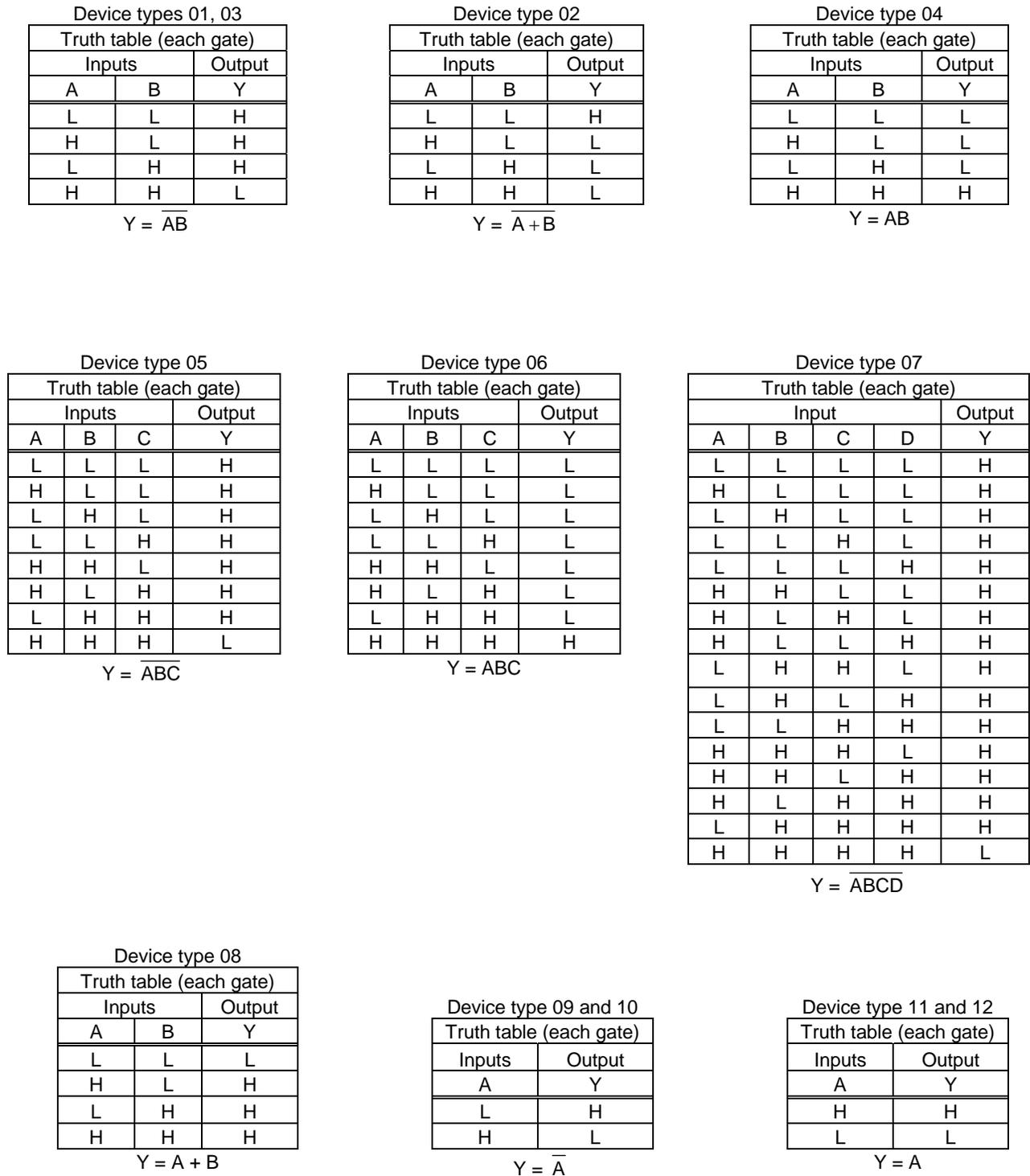
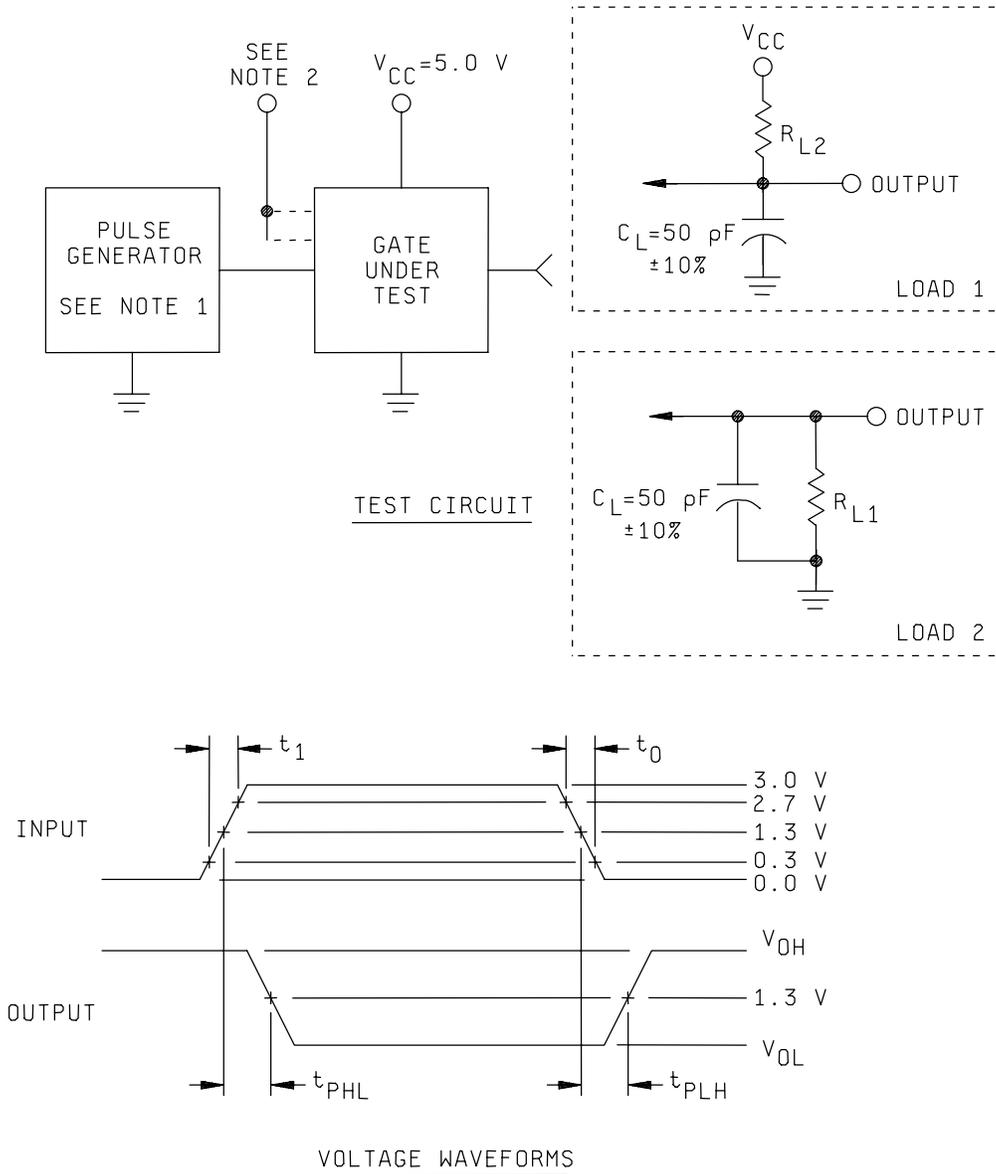


FIGURE 2. Truth tables and logic equations.

DEVICE TYPES 01,02,03,05,07,09 AND 10

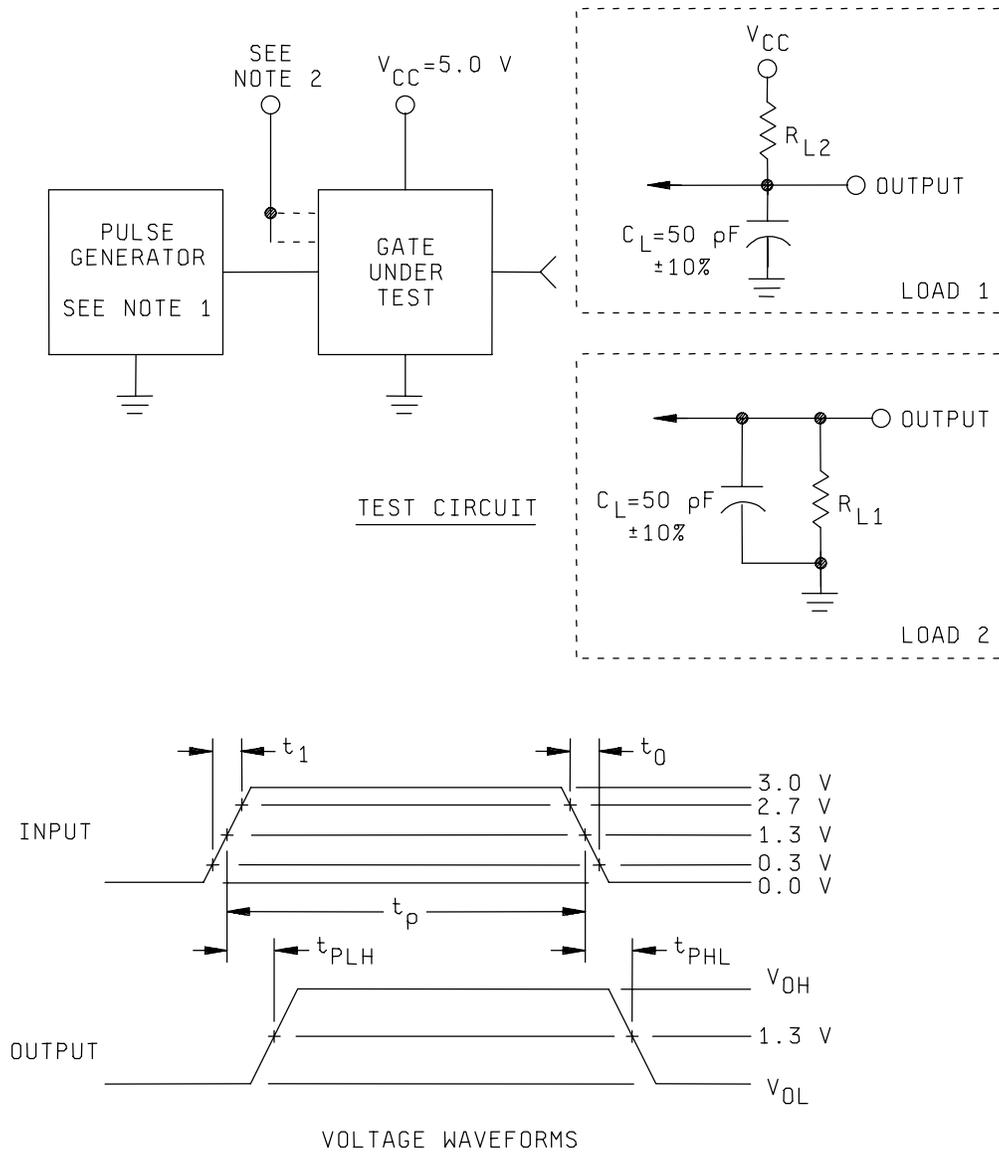


NOTES:

1. Input pulse characteristics: $t_1 = t_0 = 6 \pm 1.5$ ns; PRR ≤ 1.0 MHz; duty cycle = 50%.
2. Inputs not under test, for device types 01, 03, 05, and 07 are 2.7 V; for device type 02 is ground.
3. $C_L = 50$ pF $\pm 10\%$, includes jig and probe capacitance.
4. $R_{L1} = 499 \Omega \pm 1\%$ for device types 01, 02, 05, 07, and 09; $R_{L2} = 680 \Omega \pm 5\%$ for device types 03 and 10.
5. Voltage measurements are to be made with respect to network ground terminal.

FIGURE 3. Switching time test circuit and waveforms for device types 01, 02, 03, 05, 07, 09, and 10.

DEVICE TYPES 04,06,08,11 AND 12



NOTES:

1. Input pulse characteristics: $t_1 = t_0 = 6 \pm 1.5$ ns; $PRR \leq 1.0$ MHz; duty cycle = 50%.
2. Inputs not under test, for device types 04 and 06 are 2.7 V; for device type 08 is ground.
3. $C_L = 50$ pF $\pm 10\%$, includes jig and probe capacitance.
4. $R_{L1} = 499 \Omega \pm 1\%$ for device types 04, 06, 08, and 11; $R_{L2} = 680 \Omega \pm 5\%$ for device type 12.
5. Voltage measurements are to be made with respect to network ground terminal.

FIGURE 3. Switching time test circuit and waveforms for device types 04, 06, 08, 11, and 12.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V _{CC}						
1 T _C = 25°C	V _{OH}	3006	1	0.8 V	2.0 V	-1.0 mA				GND								4.5 V	1Y	2.4		V	
		"	2	2.0 V	0.8 V	-1.0 mA				"								"	1Y	"		"	
		"	3				0.8 V	2.0 V	-1.0 mA	"									"	2Y	"		"
		"	4				2.0 V	0.8 V	-1.0 mA	"									"	2Y	"		"
		"	5							"	-1.0 mA	0.8 V	2.0 V						"	3Y	"		"
		"	6							"	-1.0 mA	2.0 V	0.8 V						"	3Y	"		"
		"	7							"					-1.0 mA	0.8 V	2.0 V		"	4Y	"		"
		"	8							"					-1.0 mA	2.0 V	0.8 V		"	4Y	"		"
	V _{OL}	3007	9	2.0 V	2.0 V	12 mA					"								"	1Y		0.4	"
		"	10				2.0 V	2.0 V	12 mA	"									"	2Y			"
		"	11							"	12 mA	2.0 V	2.0 V						"	3Y			"
		"	12							"				12 mA	2.0 V	2.0 V			"	4Y			"
	V _{IC}		13	-18 mA						"									"	1A		-1.5	"
			14		-18 mA					"									"	1B			"
			15			-18 mA				"									"	2A			"
			16				-18 mA			"									"	2B			"
			17					-18 mA		"		-18 mA							"	3A			"
			18							"			-18 mA						"	3B			"
			19							"				-18 mA					"	4A			"
			20							"					-18 mA				"	4B			"
	I _{IL}	3009	21	0.4 V						"								5.5 V	"	1A	2/	2/	μA
		"	22		0.4 V					"									"	1B			"
		"	23				0.4 V			"									"	2A			"
		"	24					0.4 V		"									"	2B			"
		"	25						0.4 V	"			0.4 V						"	3A			"
		"	26							"				0.4 V					"	3B			"
		"	27							"					0.4 V				"	4A			"
		"	28							"						0.4 V			"	4B			"
	I _{IH1}	3010	29	2.7 V						"									"	1A		20	"
		"	30		2.7 V					"									"	1B			"
		"	31				2.7 V			"									"	2A			"
		"	32					2.7 V		"									"	2B			"
		"	33							"		2.7 V							"	3A			"
		"	34							"			2.7 V						"	3B			"
		"	35							"				2.7 V					"	4A			"
		"	36							"					2.7 V				"	4B			"
	I _{IH2}		37	7.0 V						"									"	1A		100	"
		"	38		7.0 V					"									"	1B			"
		"	39				7.0 V			"									"	2A			"
		"	40					7.0 V		"									"	2B			"
		"	41							"		7.0 V							"	3A			"
		"	42							"			7.0 V						"	3B			"
		"	43							"				7.0 V					"	4A			"
		"	44							"					7.0 V				"	4B			"

See footnotes at end of table.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit	
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max		
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V _{CC}					
1 T _C = 25°C	I _O	3011	45	GND	GND	2.25 V				GND							5.5 V	1Y	-20	-112	mA	
		3/ 4/	46				GND	GND	2.25 V	"							"	2Y	"	"	"	
		"	47								"	2.25 V	GND	GND				"	3Y	"	"	"
		"	48											2.25 V	GND	GND		"	4Y	"	"	"
	I _{CC} H	3005	49	GND	GND		GND	GND		"		GND	GND		GND	GND	"	V _{CC}			1.6	"
I _{CC} L	3005	50	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}			7.8	"	
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.																					
9 T _C = 25°C	t _{PLH}	3003 Fig. 3	51	IN	2.7 V	OUT				GND							5.0 V	1A to 1Y	2	8	ns	
			52	2.7 V	IN	OUT				"							"	1B to 1Y	"	"	"	
			53				IN	2.7 V	OUT	"							"	2A to 2Y	"	"	"	
			54				2.7 V	IN	OUT	"							"	2B to 2Y	"	"	"	
			55							"	OUT	IN	2.7 V				"	3A to 3Y	"	"	"	
			56							"	OUT	2.7 V	IN				"	3B to 3Y	"	"	"	
			57							"				OUT	IN	2.7 V	"	4A to 4Y	"	"	"	
			58							"				OUT	2.7 V	IN	"	4B to 4Y	"	"	"	
	t _{PHL}	"	"	59	IN	2.7 V	OUT				"						"	1A to 1Y	3	8	"	
				60	2.7 V	IN	OUT				"						"	1B to 1Y	"	"	"	
				61				IN	2.7 V	OUT	"						"	2A to 2Y	"	"	"	
				62				2.7 V	IN	OUT	"						"	2B to 2Y	"	"	"	
				63							"	OUT	IN	2.7 V			"	3A to 3Y	"	"	"	
64							"	OUT	2.7 V	IN			"	3B to 3Y	"	"	"					
65							"				OUT	IN	2.7 V	"	4A to 4Y	"	"	"				
66							"				OUT	2.7 V	IN	"	4B to 4Y	"	"	"				
10	t _{PLH}	Same tests and terminal conditions as subgroup 9, except T _C = +125°C.																		2	10	"
	t _{PHL}																			3	10	"
11	Same tests, terminal conditions and limits as for subgroup 10, except T _C = -55°C.																					

1/ Pins not referenced are N/C.

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

Parameters	Min/Max limits in μ A for circuit		
	A	B	C
I _{IL}	0/-100	0/-100	0/-100

3/ Method 3011 of MIL-STD-883 shall be used, except the output 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}.

4/ I_O min/max limit for circuits B and C shall be: -30/ -110 mA.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1Y	1A	1B	2Y	2A	2B	GND	3A	3B	3Y	4A	4B	4Y	V _{CC}						
1 T _C = 25°C	V _{OH}	3006	1	-10 mA	0.8 V	0.8 V												4.5 V	1Y	2.4		V	
		"	2				-1.0 mA	0.8 V	0.8 V	"								"	2Y	"		"	
		"	3							"	0.8 V	0.8 V	-1.0 mA						"	3Y	"		"
		"	4							"				0.8 V	0.8 V	-1.0 mA			"	4Y	"		"
	V _{OL}	3007	5	12 mA	2.0 V	0.8 V													"	1Y		0.4	"
		"	6	12 mA	0.8 V	2.0 V													"	1Y			"
		"	7				12 mA	2.0 V	0.8 V	"									"	2Y			"
		"	8				12 mA	0.8 V	2.0 V	"									"	2Y			"
		"	9							"	2.0 V	0.8 V	12 mA						"	3Y			"
		"	10							"	0.8 V	2.0 V	12 mA						"	3Y			"
		"	11							"				2.0 V	0.8 V	12 mA			"	4Y			"
		"	12							"				0.8 V	2.0 V	12 mA			"	4Y			"
	V _{IC}		13		-18 mA														"	1A		-1.5	"
			14			-18 mA													"	1B			"
			15					-18 mA											"	2A			"
			16						-18 mA										"	2B			"
			17								-18 mA								"	3A			"
			18									-18 mA							"	3B			"
			19											-18 mA					"	4A			"
			20												-18 mA				"	4B			"
	I _{IL}	3009	21		0.4 V													5.5 V	"	1A	2/	2/	μA
		"	22			0.4 V													"	1B			"
		"	23				0.4 V												"	2A			"
		"	24						0.4 V										"	2B			"
		"	25							0.4 V									"	3A			"
		"	26								0.4 V								"	3B			"
		"	27										0.4 V						"	4A			"
		"	28											0.4 V					"	4B			"
	I _{IH1}	3010	29		2.7 V														"	1A		20	"
		"	30			2.7 V													"	1B			"
		"	31					2.7 V											"	2A			"
		"	32						2.7 V										"	2B			"
		"	33								2.7 V								"	3A			"
		"	34									2.7 V							"	3B			"
		"	35										2.7 V						"	4A			"
		"	36											2.7 V					"	4B			"
	I _{IH2}		37		7.0 V														"	1A		100	"
		"	38			7.0 V													"	1B			"
		"	39					7.0 V											"	2A			"
		"	40						7.0 V										"	2B			"
		"	41							7.0 V									"	3A			"
		"	42								7.0 V								"	3B			"
		"	43									7.0 V							"	4A			"
		"	44										7.0 V						"	4B			"
	I _o	3011	45	2.25 V	GND	GND													"	1Y	-20	-112	mA
		3/ 4/	46				2.25 V	GND	GND										"	2Y			"
		"	47								GND	GND	2.25 V						"	3Y			"
		"	48											GND	GND	2.25 V			"	4Y			"

See footnotes at end of table.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1Y	1A	1B	2Y	2A	2B	GND	3A	3B	3Y	4A	4B	4Y	V _{CC}						
1	I _{CCH}	3005	49		GND	GND		GND	GND	GND	GND	GND		GND	GND		5.5 V	V _{CC}	2.8	mA			
	I _{CCL}	3005	50		4.5 V	4.5 V		4.5 V	4.5 V	GND	4.5 V	4.5 V		4.5 V	4.5 V		5.5 V				V _{CC}	9.0	mA
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.																						
9	t _{PLH}	3003 Fig. 3	51	OUT	IN	GND				GND							5.0 V	1A to 1Y	2	8	ns		
			52	OUT	GND	IN													"	1B to 1Y	"	"	"
			53					OUT	IN	GND	"								"	2A to 2Y	"	"	"
			54					OUT	GND	IN	"								"	2B to 2Y	"	"	"
			55								"	IN	GND	OUT					"	3A to 3Y	"	"	"
			56								"	GND	IN	OUT					"	3B to 3Y	"	"	"
			57								"				IN	GND	OUT		"	4A to 4Y	"	"	"
			58								"				GND	IN	OUT		"	4B to 4Y	"	"	"
	t _{PHL}	"	"	59	OUT	IN	GND				"							"	1A to 1Y	3	8	"	
				60	OUT	GND	IN				"								"	1B to 1Y	"	"	"
				61				OUT	IN	GND	"								"	2A to 2Y	"	"	"
				62				OUT	GND	IN	"								"	2B to 2Y	"	"	"
				63							"	IN	GND	OUT					"	3A to 3Y	"	"	"
				64							"	GND	IN	OUT					"	3B to 3Y	"	"	"
10	t _{PLH}	Same tests and terminal conditions as subgroup 9, except T _C = +125°C.																	2	10	"		
	t _{PHL}																		3	10	"		
11	Same tests, terminal conditions and limits as for subgroup 10, except T _C = -55°C.																						

1/ For case 2, pins not referenced are N/C.

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

Parameters	Min/Max limits in μ A for circuit		
	A	B	C
I _{IL}	0/-100	0/-100	0/-100

3/ Method 3011 of MIL-STD-883 shall be used, except the output 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}.

4/ I_O min/max limit for circuits B and C shall be: -30/-110 mA.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V _{CC}						
1 T _C = 25°C	V _{OL}	3006	1	2.0 V	2.0 V	12 mA												4.5 V	1Y		0.4	V	
		"	2				2.0 V	2.0 V	12 mA	"									"	2Y		"	"
		"	3							"	12 mA	2.0 V	2.0 V						"	3Y		"	"
		"	4							"				12 mA	2.0 V	2.0 V			"	4Y		"	"
	V _{IC}	3009	5	-18 mA							"								"	1A		-1.5	"
			6		-18 mA						"								"	1B		"	"
			7				-18 mA				"								"	2A		"	"
			8					-18 mA			"								"	2B		"	"
			9						-18 mA		"			-18 mA					"	3A		"	"
			10								"				-18 mA				"	3B		"	"
			11								"						-18 mA		"	4A		"	"
			12								"							-18 mA	"	4B		"	"
	I _{IL}	3009	13	0.4 V							"							5.5 V	1A	2/	2/	μA	
			14		0.4 V						"								"	1B		"	"
			15			0.4 V					"								"	2A		"	"
			16				0.4 V				"								"	2B		"	"
			17								"		0.4 V						"	3A		"	"
			18								"			0.4 V					"	3B		"	"
			19								"				0.4 V				"	4A		"	"
			20								"						0.4 V		"	4B		"	"
	I _{IH1}	3010	21	2.7 V							"								"	1A		20	"
			22		2.7 V						"								"	1B		"	"
			23				2.7 V				"								"	2A		"	"
			24					2.7 V			"								"	2B		"	"
			25						2.7 V		"			2.7 V					"	3A		"	"
			26								"				2.7 V				"	3B		"	"
			27								"					2.7 V			"	4A		"	"
			28								"						2.7 V		"	4B		"	"
	I _{IH2}	"	29	7.0 V							"								"	1A		100	"
			30		7.0 V						"								"	1B		"	"
			31				7.0 V				"								"	2A		"	"
			32					7.0 V			"								"	2B		"	"
			33								"		7.0 V						"	3A		"	"
			34								"			7.0 V					"	3B		"	"
			35								"				7.0 V				"	4A		"	"
			36								"					7.0 V		7.0 V	"	4B		"	"
	I _{CCX}	"	37	0.8 V	5.0 V	5.5 V					"							4.5 V	1A		100	"	
			38	5.0 V	0.8 V	5.5 V					"							"	1B		"	"	
			39				0.8 V	5.0 V	5.5 V		"							"	2A		"	"	
			40					5.0 V	0.8 V	5.5 V	"							"	2B		"	"	
			41								"	5.5 V	0.8 V	5.0 V				"	3A		"	"	
			42								"		5.5 V	5.0 V	0.8 V			"	3B		"	"	
			43								"					5.5 V	0.8 V	5.0 V	"	4A		"	"
			44								"						5.5 V	0.8 V	"	4B		"	"
	I _{CCH}	3005	45	GND	GND		GND	GND		"		GND	GND		GND	GND	5.5 V	V _{CC}			1.6	mA	
	I _{CCL}	3005	46	4.5 V	4.5 V		4.5 V	4.5 V		"		4.5 V	4.5 V		4.5 V	4.5 V	5.5 V	V _{CC}			7.8	mA	

See footnotes at end of table.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V _{CC}						
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.																						
9 T _C = 25°C	t _{PLH}	3003 Fig. 3	47	IN	2.7 V	OUT				GND								5.0 V	1A to 1Y	10	33	ns	
			48	2.7 V	IN	OUT				"									"	1B to 1Y	"	"	"
			49				IN	2.7 V	OUT	"									"	2A to 2Y	"	"	"
			50				2.7 V	IN	OUT	"									"	2B to 2Y	"	"	"
			51							"	OUT	IN	2.7 V						"	3A to 3Y	"	"	"
			52							"	OUT	2.7 V	IN						"	3B to 3Y	"	"	"
			53							"				OUT	IN	2.7 V			"	4A to 4Y	"	"	"
			54							"				OUT	2.7 V	IN			"	4B to 4Y	"	"	"
	t _{PHL}	"	"	55	IN	2.7 V	OUT			"								"	1A to 1Y	7	18	"	
				56	2.7 V	IN	OUT			"								"	1B to 1Y	"	"	"	
				57				IN	2.7 V	OUT	"							"	2A to 2Y	"	"	"	
				58				2.7 V	IN	OUT	"							"	2B to 2Y	"	"	"	
				59							"	OUT	IN	2.7 V				"	3A to 3Y	"	"	"	
				60							"	OUT	2.7 V	IN				"	3B to 3Y	"	"	"	
10	t _{PLH}	Same tests and terminal conditions as subgroup 9, except T _C = +125°C.																	10	40	"		
	t _{PHL}																		7	21	"		
11	Same tests, terminal conditions and limits as for subgroup 10, except T _C = -55°C.																						

1/ For case 2, pins not referenced are N/C.

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

Parameters	Min/Max limits in μ A for circuit		
	A	B	C
I _{IL}	0/-100	0/-100	0/-100

TABLE III. Group A inspection for device type 04.
Terminal conditions (pins not designated may be high ≥ 2.0 V or low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V _{CC}						
1 T _C = 25°C	V _{OH}	3006	1	2.0 V	2.0 V	-1.0 mA												4.5 V	1Y	2.4		V	
		"	2				2.0 V	2.0 V	-1.0 mA	"									"	2Y	"		"
		"	3							"	-1.0 mA	2.0 V	2.0 V						"	3Y	"		"
		"	4							"					-1.0 mA	2.0 V	2.0 V		"	4Y	"		"
	V _{OL}	3007	5	0.8 V	5.5 V	12 mA													"	1Y		0.4	"
		"	6	5.5 V	0.8 V	12 mA													"	1Y			"
		"	7				0.8 V	5.5 V	12 mA	"									"	2Y			"
		"	8				5.5 V	0.8 V	12 mA	"									"	2Y			"
		"	9							"	12 mA	0.8 V	5.5 V						"	3Y			"
		"	10							"	12 mA	5.5 V	0.8 V						"	3Y			"
		"	11							"					12 mA	0.8 V	5.5 V		"	4Y			"
		"	12							"					12 mA	5.5 V	0.8 V		"	4Y			"
	V _{IC}		13	-18 mA							"								"	1A		-1.5	"
			14		-18 mA						"								"	1B			"
			15				-18 mA				"								"	2A			"
			16					-18 mA			"								"	2B			"
			17						-18 mA		"								"	3A			"
			18								"				-18 mA				"	3B			"
			19								"					-18 mA			"	4A			"
			20								"						-18 mA		"	4B			"
	I _{IL}	3009	21	0.4 V							"							5.5 V	"	1A	2/	2/	μA
		"	22		0.4 V						"								"	1B			"
		"	23					0.4 V			"								"	2A			"
		"	24						0.4 V		"								"	2B			"
		"	25								"		0.4 V						"	3A			"
		"	26								"			0.4 V					"	3B			"
		"	27								"					0.4 V			"	4A			"
		"	28								"						0.4 V		"	4B			"
	I _{IH1}	3010	29	2.7 V							"								"	1A		20	"
		"	30		2.7 V						"								"	1B			"
		"	31					2.7 V			"								"	2A			"
		"	32						2.7 V		"								"	2B			"
		"	33								"		2.7 V						"	3A			"
		"	34								"			2.7 V					"	3B			"
		"	35								"					2.7 V			"	4A			"
		"	36								"						2.7 V		"	4B			"
	I _{IH2}		37	7.0 V							"								"	1A		100	"
		"	38		7.0 V						"								"	1B			"
		"	39					7.0 V			"								"	2A			"
		"	40						7.0 V		"								"	2B			"
		"	41								"		7.0 V						"	3A			"
		"	42								"			7.0 V					"	3B			"
		"	43								"					7.0 V			"	4A			"
		"	44								"						7.0 V		"	4B			"

See footnotes at end of table.

TABLE III. Group A inspection for device type 04 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V or low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V _{CC}						
1	I _O	3011 3/ 4/ "	45	5.5 V	5.5 V	2.25 V					GND							5.5 V	1Y	-30	-112	mA	
			46				5.5 V	5.5 V	2.25 V	"									"	2Y	"	"	"
			47								"	2.25 V	5.5 V	5.5 V					"	3Y	"	"	"
			48								"				2.25 V	5.5 V	5.5 V		"	4Y	"	"	"
	I _{CCH}	3005	49	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}		3.0	"	
I _{CCL}	3005	50	GND	GND		GND	GND		"		GND	GND		GND	GND		"	V _{CC}		9.3	"		
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.																						
9	t _{PLH}	3003 Fig. 3 "	51	IN	2.7 V	OUT					GND							5.0 V	1A to 1Y	2	9	ns	
			52	2.7 V	IN	OUT					"								"	1B to 1Y	"	"	"
			53					IN	2.7 V	OUT	"								"	2A to 2Y	"	"	"
			54					2.7 V	IN	OUT	"								"	2B to 2Y	"	"	"
			55								"	OUT	IN	2.7 V					"	3A to 3Y	"	"	"
			56								"	OUT	2.7 V	IN					"	3B to 3Y	"	"	"
			57								"					OUT	IN	2.7 V	"	4A to 4Y	"	"	"
			58								"					OUT	2.7 V	IN	"	4B to 4Y	"	"	"
	t _{PHL}	"	"	59	IN	2.7 V	OUT					"							"	1A to 1Y	3	9	"
				60	2.7 V	IN	OUT					"							"	1B to 1Y	"	"	"
				61					IN	2.7 V	OUT	"							"	2A to 2Y	"	"	"
				62					2.7 V	IN	OUT	"							"	2B to 2Y	"	"	"
				63								"	OUT	IN	2.7 V				"	3A to 3Y	"	"	"
64								"	OUT	2.7 V	IN				"	3B to 3Y	"	"	"				
65								"					OUT	IN	2.7 V	"	4A to 4Y	"	"	"			
66								"					OUT	2.7 V	IN	"	4B to 4Y	"	"	"			
10	t _{PLH}	Same tests and terminal conditions as subgroup 9, except T _C = +125°C.																		2	11	"	
	t _{PHL}	Same tests and terminal conditions as subgroup 9, except T _C = +125°C.																		3	11	"	
11	Same tests, terminal conditions and limits as for subgroup 10, except T _C = -55°C.																						

1/ Pins not referenced are N/C.

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

Parameters	Min/Max limits in μ A for circuit		
	A	B	C
I _{IL}	0/-100	0/-100	0/-100

3/ Method 3011 of MIL-STD-883 shall be used, except the output 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}.

4/ I_O min/max limit for circuits B and C shall be: -30/ -110 mA.

TABLE III. Group A inspection for device type 05.
Terminal conditions (pins not designated may be high ≥ 2.0 V or low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit							
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max								
			Test no.	1A	1B	2A	2B	2C	2Y	GND	3Y	3A	3B	3C	1Y	1C	V _{CC}											
1 T _C = 25°C	V _{OH}	3006	1	0.8 V	2.0 V													-1.0 mA	2.0 V	4.5 V	1Y	2.4		V				
		"	2	2.0 V	0.8 V														-1.0 mA	2.0 V	"	1Y	"		"			
		"	3																-1.0 mA	0.8 V	"	1Y	"		"			
		"	4			0.8 V	2.0 V	2.0 V	-1.0 mA	"										"	"	2Y	"		"			
		"	5			2.0 V	0.8 V	2.0 V	-1.0 mA	"										"	"	2Y	"		"			
		"	6			2.0 V	2.0 V	0.8 V	-1.0 mA	"										"	"	2Y	"		"			
		"	7																	"	-1.0 mA	0.8 V	2.0 V	2.0 V	"	3Y	"	"
		"	8																	"	-1.0 mA	2.0 V	0.8 V	2.0 V	"	3Y	"	"
		"	9																	"	-1.0 mA	2.0 V	2.0 V	0.8 V	"	3Y	"	"
		V _{OL}	3007	10	2.0 V	2.0 V													12 mA	2.0 V	"	1Y		0.4	"			
	"		11			2.0 V	2.0 V	2.0 V	12 mA	"										"	"	"	2Y	"		"		
	"		12							"	12 mA	2.0 V	2.0 V	2.0 V						"	"	"	3Y	"		"		
		V _{IC}		13	-18 mA																	"	1A		-1.5	"		
	"		14		-18 mA																	"	1B			"		
	"		15																		-18 mA	"	1C			"		
	"		16				-18 mA																"	2A			"	
	"		17					-18 mA															"	2B			"	
	"		18						-18 mA														"	2C			"	
	"		19											-18 mA									"	3A			"	
	"		20												-18 mA								"	3B			"	
	"		21													-18 mA							"	3C			"	
	"		I _{IL}	3009	22	0.4 V																5.5 V	1A	2/	2/	μA		
	"			23		0.4 V																		"	"	"	"	
	"	24																				0.4 V	"	"	"	"		
	"	25					0.4 V																"	"	"	"		
	"	26						0.4 V															"	"	"	"		
	"	27							0.4 V														"	"	"	"		
	"	28												0.4 V									"	"	"	"		
	"	29													0.4 V								"	"	"	"		
	"	30														0.4 V							"	"	"	"		
	"	I _{IH1}		3010	31	2.7 V																	"	1A		20	"	
	"		32			2.7 V																	"	1B		"	"	
	"		33																				"	1C		"	"	
	"		34				2.7 V																"	2A		"	"	
	"		35					2.7 V															"	2B		"	"	
	"		36						2.7 V														"	2C		"	"	
	"		37											2.7 V									"	3A		"	"	
	"		38												2.7 V								"	3B		"	"	
	"		39													2.7 V							"	3C		"	"	
		I _{IH2}	"	40	7.0 V																	"	1A		100	"		
	"		41			7.0 V																	"	1B		"	"	
	"		42																				"	1C		"	"	
	"		43				7.0 V																"	2A		"	"	
	"		44					7.0 V															"	2B		"	"	
	"		45						7.0 V														"	2C		"	"	
	"		46											7.0 V									"	3A		"	"	
	"		47												7.0 V								"	3B		"	"	
	"		48													7.0 V							"	3C		"	"	

See footnotes at end of table.

TABLE III. Group A inspection for device type 05 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V or low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1B	2A	2B	2C	2Y	GND	3Y	3A	3B	3C	1Y	1C	V _{CC}						
1 T _C = 25°C	I _O	3011	49	4.5 V	4.5 V					GND					2.25 V	4.5 V	5.5 V	1Y	-30	-112	mA		
		3/4/	50			4.5 V	4.5 V	4.5 V	2.25 V	"								"	2Y	"	"	"	
		"	51							"	2.25 V	4.5 V	4.5 V	4.5 V				"	3Y	"	"	"	
	I _{CCH}	3005	52	4.5 V		"		4.5 V	4.5 V	4.5 V		4.5 V	"	V _{CC}		1.2	"						
I _{CCL}	3005	53	GND	GND	GND	GND	GND		"		GND	GND	GND		GND	"	V _{CC}		6.0	"			
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.																						
9 T _C = 25°C	t _{PLH}	3003 Fig. 3	54	IN	2.7 V					GND						OUT	2.7 V	5.0 V	1A to 1Y	2	8	ns	
			55	2.7 V	IN					"						OUT	2.7 V	"	1B to 1Y	"	"	"	
			56	2.7 V	2.7 V					"						OUT	IN	"	"	1C to 1Y	"	"	"
			57			IN	2.7 V	2.7 V	OUT	"								"	"	2A to 2Y	"	"	"
			58			2.7 V	IN	2.7 V	OUT	"								"	"	2B to 2Y	"	"	"
			59			2.7 V	2.7 V	IN	OUT	"								"	"	2C to 2Y	"	"	"
			60							"	OUT	IN	2.7 V	2.7 V				"	"	3A to 3Y	"	"	"
			61							"	OUT	2.7 V	IN	2.7 V				"	"	3B to 3Y	"	"	"
	62							"	OUT	2.7 V	2.7 V	IN				"	"	3C to 3Y	"	"	"		
	t _{PHL}	"	"	63	IN	2.7 V				"						OUT	2.7 V	"	1A to 1Y	3	8	"	
				64	2.7 V	IN				"						OUT	2.7 V	"	1B to 1Y	"	"	"	
				65	2.7 V	2.7 V				"						OUT	IN	"	"	1C to 1Y	"	"	"
				66			IN	2.7 V	2.7 V	OUT	"						"	"	"	2A to 2Y	"	"	"
				67			2.7 V	IN	2.7 V	OUT	"						"	"	"	2B to 2Y	"	"	"
68						2.7 V	2.7 V	IN	OUT	"						"	"	"	2C to 2Y	"	"	"	
69							"	OUT	IN	2.7 V	2.7 V				"	"	3A to 3Y	"	"	"			
70							"	OUT	2.7 V	IN	2.7 V				"	"	3B to 3Y	"	"	"			
71							"	OUT	2.7 V	2.7 V	IN				"	"	3C to 3Y	"	"	"			
10	t _{PLH}	Same tests and terminal conditions as subgroup 9, except T _C = +125°C.																		2	10	"	
	t _{PHL}	Same tests and terminal conditions as subgroup 9, except T _C = +125°C.																		3	10	"	
11	Same tests, terminal conditions and limits as for subgroup 10, except T _C = -55°C.																						

1/ Pins not referenced are N/C.

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

Parameters	Min/Max limits in μ A for circuit		
	A	B	C
I _{IL}	0/-100	0/-100	0/-100

3/ Method 3011 of MIL-STD-883 shall be used, except the output 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}.

4/ I_O min/max limit for circuits B and C shall be: -30/ -110 mA.

TABLE III. Group A inspection for device type 06.
Terminal conditions (pins not designated may be high ≥ 2.0 V or low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit			
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max				
			Test no.	1A	1B	2A	2B	2C	2Y	GND	3Y	3A	3B	3C	1Y	1C	V _{CC}							
1 T _C = 25°C	V _{OH}	3006	1	2.0 V	2.0 V													1Y	2.4		V			
		"	2			2.0 V	2.0 V	2.0 V	-1.0 mA	"									2Y	"		"		
		"	3							"	-1.0 mA	2.0 V	2.0 V	2.0 V					3Y	"		"		
	V _{OL}	3007	4	0.8 V	2.0 V											12 mA	2.0 V	"	1Y		0.4	"		
		"	5	2.0 V	0.8 V											12 mA	2.0 V	"	1Y		"	"		
		"	6	2.0 V	2.0 V											12 mA	0.8 V	"	1Y		"	"		
		"	7			0.8 V	2.0 V	2.0 V	12 mA	"									"	2Y		"	"	
		"	8			2.0 V	0.8 V	2.0 V	12 mA	"									"	2Y		"	"	
		"	9			2.0 V	2.0 V	0.8 V	12 mA	"									"	2Y		"	"	
		"	10							"	12 mA	0.8 V	2.0 V	2.0 V					"	3Y		"	"	
		"	11							"	12 mA	2.0 V	0.8 V	2.0 V	2.0 V				"	3Y		"	"	
		"	12							"	12 mA	2.0 V	2.0 V	0.8 V					"	3Y		"	"	
		V _{IC}		13	-18 mA							"								"	1A		-1.5	"
				14		-18 mA						"								"	1B		"	"
				15								"						-18 mA		"	1C		"	"
			16				-18 mA				"								"	2A		"	"	
			17					-18 mA			"								"	2B		"	"	
			18						-18 mA		"								"	2C		"	"	
			19								"		-18 mA						"	3A		"	"	
			20								"			-18 mA					"	3B		"	"	
			21								"				-18 mA				"	3C		"	"	
	I _{IL}	3009	22	0.4 V							"							5.5 V	1A	2/	2/	μA		
		"	23		0.4 V						"								"	1B		"	"	
		"	24								"						0.4 V		"	1C		"	"	
		"	25				0.4 V				"								"	2A		"	"	
		"	26					0.4 V			"								"	2B		"	"	
		"	27						0.4 V		"								"	2C		"	"	
		"	28								"		0.4 V						"	3A		"	"	
		"	29								"			0.4 V					"	3B		"	"	
		"	30								"				0.4 V				"	3C		"	"	
		I _{IH1}	3010	31	2.7 V							"								"	1A		20	"
	"		32		2.7 V						"								"	1B		"	"	
	"		33								"						2.7 V		"	1C		"	"	
	"		34				2.7 V				"								"	2A		"	"	
	"		35					2.7 V			"								"	2B		"	"	
	"		36						2.7 V		"								"	2C		"	"	
	"		37								"		2.7 V						"	3A		"	"	
	"		38								"			2.7 V					"	3B		"	"	
	"		39								"				2.7 V				"	3C		"	"	
	I _{IH2}		40	7.0 V							"								"	1A		100	"	
		"	41		7.0 V						"								"	1B		"	"	
		"	42								"						7.0 V		"	1C		"	"	
		"	43				7.0 V				"								"	2A		"	"	
		"	44					7.0 V			"								"	2B		"	"	
		"	45						7.0 V		"								"	2C		"	"	
		"	46								"		7.0 V						"	3A		"	"	
		"	47								"			7.0 V					"	3B		"	"	
		"	48								"				7.0 V				"	3C		"	"	

See footnotes at end of table.

TABLE III. Group A inspection for device type 06 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V or low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit			
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max				
			Test no.	1A	1B	2A	2B	2C	2Y	GND	3Y	3A	3B	3C	1Y	1C	V _{CC}							
1 T _C = 25°C	I _O	3011	49	4.5 V	4.5 V					GND					2.25 V	4.5 V	5.5 V	1Y	-30	-112	mA			
		3/4/	50			4.5 V	4.5 V	4.5 V	2.25 V	"								"	2Y	"	"	"		
		"	51							"	2.25 V	4.5 V	4.5 V	4.5 V				"	3Y	"	"	"		
	I _{CCH}	3005	52	4.5 V		"		4.5 V	4.5 V	4.5 V		4.5 V	"	V _{CC}		2.3	"							
I _{CCL}	3005	53	GND	GND	GND	GND	GND		"		GND	GND	GND		GND	"	V _{CC}		7.0	"				
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.																							
9 T _C = 25°C	t _{PLH}	3003 Fig. 3	54	IN	2.7 V					GND						OUT	2.7 V	5.0 V	1A to 1Y	2	10	ns		
			55	2.7 V	IN						"						OUT	2.7 V	"	1B to 1Y	"	"	"	
			56	2.7 V	2.7 V						"						OUT	IN	"	1C to 1Y	"	"	"	
			57			IN	2.7 V	2.7 V	OUT	"								"	"	2A to 2Y	"	"	"	
			58			2.7 V	IN	2.7 V	OUT	"								"	"	2B to 2Y	"	"	"	
			59			2.7 V	2.7 V	IN	OUT	"								"	"	2C to 2Y	"	"	"	
			60								"	OUT	IN	2.7 V	2.7 V			"	"	3A to 3Y	"	"	"	
			61								"	OUT	2.7 V	IN	2.7 V			"	"	3B to 3Y	"	"	"	
	62								"	OUT	2.7 V	2.7 V	IN			"	"	3C to 3Y	"	"	"			
	t _{PHL}	"	"	63	IN	2.7 V					"						OUT	2.7 V	"	1A to 1Y	3	9	"	
				64	2.7 V	IN					"						OUT	2.7 V	"	1B to 1Y	"	"	"	
				65	2.7 V	2.7 V					"						OUT	IN	"	1C to 1Y	"	"	"	
				66			IN	2.7 V	2.7 V	OUT	"							"	"	"	2A to 2Y	"	"	"
				67			2.7 V	IN	2.7 V	OUT	"							"	"	"	2B to 2Y	"	"	"
68						2.7 V	2.7 V	IN	OUT	"							"	"	"	2C to 2Y	"	"	"	
10	t _{PLH}	Same tests and terminal conditions as subgroup 9, except T _C = +125°C.																		2	12	"		
	t _{PHL}																			3	11	"		
	11	Same tests, terminal conditions and limits as for subgroup 10, except T _C = -55°C.																						

1/ Pins not referenced are N/C.

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

Parameters	Min/Max limits in μ A for circuit		
	A	B	C
I _{IL}	0/-100	0/-100	0/-100

3/ Method 3011 of MIL-STD-883 shall be used, except the output 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}.

4/ I_O min/max limit for circuits B and C shall be: -30/ -110 mA.

TABLE III. Group A inspection for device type 07.
Terminal conditions (pins not designated may be high ≥ 2.0 V or low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit	
			Case 1/2	2	3	1/	6	8	9	10	12	13	14	1/	18	19	20		Min	Max		
			Test no.	1A	1B	NC	1C	1D	1Y	GND	2Y	2A	2B	NC	2C	2D	V _{CC}					
1 T _C = 25°C	V _{OH}	3006	1	0.8 V	2.0 V		2.0 V	2.0 V	-1.0 mA	GND							4.5 V	1Y	2.4		V	
		"	2	2.0 V	0.8 V		2.0 V	2.0 V	-1.0 mA	"							"	1Y	"		"	
		"	3	2.0 V	2.0 V		0.8 V	2.0 V	-1.0 mA	"								"	1Y	"		"
		"	4	2.0 V	2.0 V		2.0 V	0.8 V	-1.0 mA	"								"	1Y	"		"
		"	5								"	-1.0 mA	0.8 V	2.0 V		2.0 V	2.0 V	"	2Y	"		"
		"	6								"	-1.0 mA	2.0 V	0.8 V		2.0 V	2.0 V	"	2Y	"		"
		"	7								"	-1.0 mA	2.0 V	2.0 V		0.8 V	2.0 V	"	2Y	"		"
		"	8								"	-1.0 mA	2.0 V	2.0 V		2.0 V	0.8 V	"	2Y	"		"
	V _{OL}	3007	9	2.0 V	2.0 V		2.0 V	2.0 V	12 mA	"								"	1Y		0.4	"
		3007	10							"		12 mA	2.0 V	2.0 V		2.0 V	2.0 V	"	2Y		0.4	"
	V _{IC}		3007	11	-18 mA						"							"	1A		-1.5	"
			"	12		-18 mA					"							"	1B			"
			"	13				-18 mA			"							"	1C			"
			"	14					-18 mA		"							"	1D			"
			"	15							"		-18 mA					"	2A			"
			"	16							"			-18 mA				"	2B			"
			"	17							"				-18 mA			"	2C			"
			"	18							"					-18 mA		-18 mA	"	2D		
	I _{IL}	3009	3009	19	0.4 V						"							5.5 V	1A	2/	2/	μA
			"	20		0.4 V					"							"	1B			"
			"	21				0.4 V			"							"	1C			"
			"	22					0.4 V		"							"	1D			"
			"	23							"		0.4 V					"	2A			"
			"	24							"			0.4 V				"	2B			"
			"	25							"				0.4 V			"	2C			"
			"	26							"					0.4 V		0.4 V	"	2D		
	I _{IH1}	3010	3010	27	2.7 V						"							"	1A		20	"
			"	28		2.7 V					"							"	1B			"
			"	29				2.7 V			"							"	1C			"
			"	30					2.7 V		"							"	1D			"
			"	31							"		2.7 V					"	2A			"
			"	32							"			2.7 V				"	2B			"
			"	33							"				2.7 V			"	2C			"
			"	34							"					2.7 V		2.7 V	"	2D		
	I _{IH2}		3010	35	7.0 V						"							"	1A		100	"
			"	36		7.0 V					"							"	1B			"
			"	37				7.0 V			"							"	1C			"
			"	38					7.0 V		"							"	1D			"
			"	39							"		7.0 V					"	2A			"
			"	40							"			7.0 V				"	2B			"
			"	41							"				7.0 V			"	2C			"
			"	42							"					7.0 V		7.0 V	"	2D		
	I _O	3011	43	GND	GND		GND	GND	2.25 V	"								"	1Y	-20	-112	mA
		3/ 4/	44							"	2.25 V	GND	GND		GND	GND	"	2Y	-20	-112	"	
	I _{CCH}	3005	45	GND	GND		GND	GND		"		GND	GND		GND	GND	"	V _{CC}		0.8	"	
	I _{CCL}	3005	46	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}		3.9	"	

See footnotes at end of table.

TABLE III. Group A inspection for device type 07 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V or low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit			
			Case 1/2	2	3	1/	6	8	9	10	12	13	14	1/	18	19	20		Min	Max				
			Test no.	1A	1B	NC	1C	1D	1Y	GND	2Y	2A	2B	NC	2C	2D	V _{CC}							
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.																							
9 T _C = 25°C	t _{PLH}	3003 Fig. 3	47	IN	2.7 V		2.7 V	2.7 V	OUT	GND								5.0 V	1A to 1Y	2	8	ns		
			48	2.7 V	IN		2.7 V	2.7 V	OUT	"									"	1B to 1Y	"	"	"	
			49	2.7 V	2.7 V		IN	2.7 V	OUT	"									"	1C to 1Y	"	"	"	
			50	2.7 V	2.7 V		2.7 V	IN	OUT	"									"	1D to 1Y	"	"	"	
			51								"	OUT	IN	2.7 V		2.7 V	2.7 V		"	2A to 2Y	"	"	"	
			52								"	OUT	2.7 V	IN		2.7 V	2.7 V		"	2B to 2Y	"	"	"	
			53								"	OUT	2.7 V	2.7 V		IN	2.7 V		"	2C to 2Y	"	"	"	
			54								"	OUT	2.7 V	2.7 V		2.7 V	IN		"	2D to 2Y	"	"	"	
	t _{PHL}	"	"	55	IN	2.7 V		2.7 V	2.7 V	OUT	"								"	1A to 1Y	3	8	"	
				56	2.7 V	IN		2.7 V	2.7 V	OUT	"								"	1B to 1Y	"	"	"	
				57	2.7 V	2.7 V		IN	2.7 V	OUT	"								"	1C to 1Y	"	"	"	
				58	2.7 V	2.7 V		2.7 V	IN	OUT	"								"	1D to 1Y	"	"	"	
				59								"	OUT	IN	2.7 V		2.7 V	2.7 V		"	2A to 2Y	"	"	"
				60								"	OUT	2.7 V	IN		2.7 V	2.7 V		"	2B to 2Y	"	"	"
10	t _{PLH}	Same tests and terminal conditions as subgroup 9, except T _C = +125°C.																			2	10	"	
	t _{PHL}																				3	10	"	
11	Same tests, terminal conditions and limits as for subgroup 10, except T _C = -55°C.																							

1/ Pins not referenced are N/C.

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

Parameters	Min/Max limits in μ A for circuit		
	A	B	C
I _{IL}	0/-100	0/-100	0/-100

3/ Method 3011 of MIL-STD-883 shall be used, except the output 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}.

4/ I_O min/max limit for circuits B and C shall be: -30/ -110 mA.

TABLE III. Group A inspection for device type 08.
Terminal conditions (pins not designated may be high ≥ 2.0 V or low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V _{CC}						
1 T _C = 25°C	V _{OH}	3006	1	2.0 V	0.8 V	-1.0 mA					GND							4.5 V	1Y	2.4		V	
		"	2	0.8 V	2.0 V	-1.0 mA					"							"	1Y	"		"	
		"	3				2.0 V	0.8 V	-1.0 mA		"								"	2Y	"		"
		"	4				0.8 V	2.0 V	-1.0 mA		"								"	2Y	"		"
		"	5								"	-1.0 mA	2.0 V	0.8 V					"	3Y	"		"
		"	6								"	-1.0 mA	0.8 V	2.0 V					"	3Y	"		"
		"	7								"				-1.0 mA	2.0 V	0.8 V		"	4Y	"		"
		"	8								"				-1.0 mA	0.8 V	2.0 V		"	4Y	"		"
	V _{OL}	3007	9	0.8 V	0.8 V	12 mA					"								"	1Y		0.4	"
		"	10				0.8 V	0.8 V	12 mA		"								"	2Y			"
		"	11								"	12 mA	0.8 V	0.8 V					"	3Y			"
		"	12								"				12 mA	0.8 V	0.8 V		"	4Y			"
	V _{IC}		13	-18 mA							"								"	1A		-1.5	"
			14		-18 mA						"								"	1B			"
			15				-18 mA				"								"	2A			"
			16					-18 mA			"								"	2B			"
			17								"		-18 mA						"	3A			"
			18								"			-18 mA					"	3B			"
			19								"					-18 mA			"	4A			"
			20								"						-18 mA		"	4B			"
	I _{IL}	3009	21	0.4 V							"							5.5 V	"	1A	2/	2/	μA
		"	22		0.4 V						"								"	1B			"
		"	23				0.4 V				"								"	2A			"
		"	24					0.4 V			"								"	2B			"
		"	25						0.4 V		"		0.4 V						"	3A			"
		"	26								"			0.4 V					"	3B			"
		"	27								"					0.4 V			"	4A			"
		"	28								"						0.4 V		"	4B			"
	I _{IH1}	3010	29	2.7 V							"								"	1A		20	"
		"	30		2.7 V						"								"	1B			"
		"	31				2.7 V				"								"	2A			"
		"	32					2.7 V			"								"	2B			"
		"	33								"		2.7 V						"	3A			"
		"	34								"			2.7 V					"	3B			"
		"	35								"					2.7 V			"	4A			"
		"	36								"						2.7 V		"	4B			"
	I _{IH2}		37	7.0 V							"								"	1A		100	"
		"	38		7.0 V						"								"	1B			"
		"	39				7.0 V				"								"	2A			"
		"	40					7.0 V			"								"	2B			"
		"	41								"		7.0 V						"	3A			"
		"	42								"			7.0 V					"	3B			"
		"	43								"					7.0 V			"	4A			"
		"	44								"						7.0 V		"	4B			"

See footnotes at end of table.

TABLE III. Group A inspection for device type 08 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V or low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit			
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max				
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V _{CC}							
1	I _O	3011 3/ 4/ "	45	4.5 V	4.5 V	2.25 V					GND							5.5 V	1Y	-30	-112	mA		
			46				4.5 V	4.5 V	2.25 V	"									"	2Y	"	"	"	
			47								"	2.25 V	4.5 V	4.5 V					"	3Y	"	"	"	
			48								"				2.25 V	4.5 V	4.5 V		"	4Y	"	"	"	
	I _{CCH}	3005	49	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}		5.0	"		
I _{CCL}	3005	50	GND	GND		GND	GND		"		GND	GND		GND	GND		"	V _{CC}		10.6	"			
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.																							
9	t _{PLH}	3003 Fig. 3	51	IN	GND	OUT					GND							5.0 V	1A to 1Y	2	10	ns		
			52	GND	IN	OUT					"								"	1B to 1Y	"	"	"	
			53					IN	GND	OUT	"								"	2A to 2Y	"	"	"	
			54					GND	IN	OUT	"								"	2B to 2Y	"	"	"	
			55								"	OUT	IN	GND					"	3A to 3Y	"	"	"	
			56								"	OUT	GND	IN					"	3B to 3Y	"	"	"	
			57								"					OUT	IN	GND	"	4A to 4Y	"	"	"	
			58								"					OUT	GND	IN	"	4B to 4Y	"	"	"	
	t _{PHL}	"	"	59	IN	GND	OUT				"								"	1A to 1Y	2	13	"	
				60	GND	IN	OUT				"								"	1B to 1Y	"	"	"	
				61					IN	GND	OUT	"								"	2A to 2Y	"	"	"
				62					GND	IN	OUT	"								"	2B to 2Y	"	"	"
				63								"	OUT	IN	GND					"	3A to 3Y	"	"	"
"	"	"	64						"	OUT	GND	IN					"	3B to 3Y	"	"	"			
			65							"					OUT	IN	GND	"	4A to 4Y	"	"	"		
"	"	"	66						"					OUT	GND	IN	"	4B to 4Y	"	"	"			
																		"						
10	t _{PLH}	Same tests and terminal conditions as subgroup 9, except T _C = +125°C.																		2	12	"		
	t _{PHL}																			2	15	"		
11	Same tests, terminal conditions and limits as for subgroup 10, except T _C = -55°C.																							

1/ Pins not referenced are N/C.

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

Parameters	Min/Max limits in μ A for circuit		
	A	B	C
I _{IL}	0/-100	0/-100	0/-100

3/ Method 3011 of MIL-STD-883 shall be used, except the output 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}.

4/ I_O min/max limit for circuits B and C shall be: -30/ -110 mA.

TABLE III. Group A inspection for device type 09, 10.
Terminal conditions (pins not designated may be high ≥ 2.0 V or low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20	Min		Max				
			Test no.	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V _{CC}							
1 T _C = 25°C	V _{OH} 2/	3006	Type																					
			09 10																					
			1	0.8 V	-1 mA							GND								4.5 V	1Y	2.4		V
			2			0.8 V	-1 mA					"								"	2Y	"		"
			3					0.8 V	-1 mA			"								"	3Y	"		"
			4									"	-1 mA	0.8 V						"	4Y	"		"
	V _{OL}	3007	5								"									5Y	"		"	
			6								"									6Y	"		"	
			7 1	2.0 V	12 mA							"									1Y		0.4	"
			8 2			2.0 V	12 mA					"									2Y			"
			9 3					2.0 V	12 mA			"									3Y			"
			10 4							2.0 V	12 mA	"									4Y			"
	V _{Ic}	3009	11 5								"									5Y			"	
			12 6								"									6Y			"	
			13 7	-18 mA								"									1A		-1.5	"
			14 8			-18 mA						"									2A			"
			15 9					-18 mA				"									3A			"
			16 10							-18 mA		"		-18 mA							4A			"
	I _{IL}	3010	17 11								"									5A			"	
			18 12								"									6A			"	
			19 13	0.4 V								"									1A	3/	3/	μA
			20 14			0.4 V						"									2A			"
			21 15					0.4 V				"									3A			"
			22 16							0.4 V		"		0.4 V							4A			"
	I _{IH1}	3011	23 17								"									5A			"	
			24 18								"									6A			"	
			25 19	2.7 V								"									1A		20	"
			26 20			2.7 V						"									2A			"
			27 21					2.7 V				"									3A			"
			28 22							2.7 V		"		2.7 V							4A			"
	I _{IH2}	3012	29 23								"									5A			"	
			30 24								"									6A			"	
			31 25	7.0 V								"									1A		100	"
			32 26			7.0 V						"									2A			"
			33 27					7.0 V				"									3A			"
			34 28							7.0 V		"		7.0 V							4A			"
	I _o 2/ 4/ 5/	3013	35 29								"									5A			"	
			36 30								"									6A			"	
			37	GND	2.25 V							"									1Y	-30	-112	mA
			38			GND	2.25 V					"									2Y			"
			39					GND	2.25 V			"									3Y			"
			40							GND	2.25 V	"		2.25 V	GND						4Y			"
I _o	3014	41								"									5Y			"		
		42								"									6Y			"		

See footnotes at end of table.

TABLE III. Group A inspection for device type 09, 10 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V or low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit							
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20	Min		Max									
			Test no.	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V _{CC}												
1	I _{CEX} 6/		Type																1Y		100	μ A							
			09	10																									
			31	GND	5.5 V						GND													5.5 V					
			32			GND	5.5 V				"													"					
			33					GND	5.5 V		"													"					
			34								"	5.5 V	GND											"					
			35								"			5.5 V	GND									"					
			36								"					5.5 V	GND							"					
			I _{CCH}	3005	43	37	GND		GND		GND		"		GND		GND						GND		"	V _{CC}		3	mA
			I _{CCL}	3005	44	38	4.5 V		4.5 V		4.5 V		"		4.5 V		4.5 V						4.5 V		"	V _{CC}		12	mA
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.																												
9	t _{PLH}	3003 Fig. 3	45	39	IN	OUT						GND							5.0 V	1A to 1Y	7/	7/	ns						
			46	40			IN	OUT				"								"	2A to 2Y	"	"	"					
			47	41					IN	OUT		"	OUT	IN						"	3A to 3Y	"	"	"					
			48	42								"								"	4A to 4Y	"	"	"					
			49	43								"			OUT	IN				"	5A to 5Y	"	"	"					
			50	44								"					OUT	IN		"	6A to 6Y	"	"	"					
	t _{PHL}	"	"	51	45	IN	OUT						"							"	1A to 1Y	8/	8/	"					
				52	46			IN	OUT				"							"	2A to 2Y	"	"	"					
				53	47					IN	OUT		"	OUT	IN					"	3A to 3Y	"	"	"					
				54	48								"		OUT	IN				"	4A to 4Y	"	"	"					
55				49								"				OUT	IN		"	5A to 5Y	"	"	"						
56				50								"					OUT	IN	"	"	6A to 6Y	"	"	"					
10	t _{PLH}	Same tests and terminal conditions as subgroup 9, except T _C = +125°C.																				9/	9/	"					
	t _{PHL}																					10/	10/	"					
11	Same tests, terminal conditions and limits as for subgroup 10, except T _C = -55°C.																												

- 1/ Pins not referenced are N/C.
- 2/ Device 09 only.
- 3/ I_{IL} limits shall be as follows:

Parameters	Min/Max limits in μ A for circuit		
	A	B	C
I _{IL}	0/-100	0/-100	0/-100

- 4/ Method 3011 of MIL-STD-883 shall be used, except the output 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}.
- 5/ I_O min/max limit for circuits B and C shall be: -30/ -110 mA.
- 6/ Device 10 only.
- 7/ For device type 09; min = 1 ns, max = 7 ns. For device type 10; min = 5 ns, max = 30 ns.
- 8/ For device type 09; min = 1 ns, max = 6 ns. For device type 10; min = 2 ns, max = 10 ns.
- 9/ For device type 09; min = 1 ns, max = 9 ns. For device type 10; min = 5 ns, max = 35 ns.
- 10/ For device type 09; min = 1 ns, max = 8 ns. For device type 10; min = 2 ns, max = 12 ns.

TABLE III. Group A inspection for device type 11, 12.
Terminal conditions (pins not designated may be high ≥ 2.0 V or low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20	Min		Max				
			Test no.	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V _{CC}							
1 T _c = 25°C	V _{OH} 2/	3006	Type																					
			11 12																					
			1	2.0 V	-1 mA					GND										4.5 V	1Y	2.4		V
			2			2.0 V	-1 mA														2Y			
			3							2.0 V	-1 mA										3Y			
			4											-1 mA	2.0 V						4Y			
	V _{OL}	3007	"	5										-1 mA	2.0 V					5Y				
				6													-1 mA	2.0 V		6Y				
				7 1	0.8 V	12 mA															1Y		0.4	
				8 2			0.8 V	12 mA													2Y			
				9 3						0.8 V	12 mA										3Y			
				10 4									12 mA	0.8 V							4Y			
	V _{Ic}	"	"	11 5											12 mA	0.8 V				5Y				
				12 6														12 mA	0.8 V	6Y				
				13 7	-18 mA																1A		-1.5	
				14 8			-18 mA														2A			
				15 9					-18 mA												3A			
				16 10										-18 mA							4A			
	I _{IL}	3009	"	17 11												-18 mA				5A				
				18 12															-18 mA	6A				
				19 13	0.4 V															5.5 V	1A	3/	3/	μA
				20 14			0.4 V														2A			
				21 15					0.4 V												3A			
				22 16								0.4 V									4A			
	I _{IH1}	3010	"	23 17												0.4 V				5A				
				24 18															0.4 V	6A				
				25 19	2.7 V																1A		20	
				26 20			2.7 V														2A			
				27 21					2.7 V												3A			
				28 22							2.7 V										4A			
	I _{IH2}	"	"	29 23												2.7 V				5A				
				30 24															2.7 V	6A				
				31 25	7.0 V																1A		100	
				32 26			7.0 V														2A			
				33 27					7.0 V												3A			
				34 28							7.0 V										4A			
	I _o 2/ 4/ 5/	3011	"	35 29												7.0 V				5A				
				36 30															7.0 V	6A				
				37	5.5 V	2.25 V															1Y	-20	-112	mA
				38			5.5 V	2.25 V													2Y			
				39					5.5 V	2.25 V											3Y			
				40									2.25 V	5.5 V							4Y			
41														2.25 V	5.5 V					5Y				
42																2.25 V	5.5 V			6Y				

See footnotes at end of table.

TABLE III. Group A inspection for device type 11, 12 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V or low ≤ 0.8 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit					
			Case 1/2		2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max						
			Test no.	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V _{CC}										
1	I _{OH} 6/		Type																1Y		100	μ A					
			11	12																							
			31	5.0 V	5.5 V						GND												5.5 V				
			32			5.0 V	5.5 V				"												"	2Y			
			33					5.0 V	5.5 V		"												"	3Y			
			34								"	5.5 V	5.0 V										"	4Y			
			35								"				5.5 V	5.0 V							"	5Y			
			36								"						5.5 V	5.0 V					"	6Y			
			I _{CCH}	3005	43	37	4.5 V		4.5 V		4.5 V		"		4.5 V		4.5 V						4.5 V	"	V _{CC}	6	mA
			I _{CCL}	3005	44	38	GND		GND		GND		"		GND		GND						GND	"	V _{CC}	14	mA
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.																										
9	t _{PLH}	3003 Fig. 3	45	39	IN	OUT						GND						5.0 V	1A to 1Y	7/	7/	ns					
			46	40			IN	OUT				"							"	2A to 2Y	"	"	"				
			47	41					IN	OUT		"							"	3A to 3Y	"	"	"				
			48	42							IN	OUT	"	OUT	IN				"	4A to 4Y	"	"	"				
			49	43								"			OUT	IN			"	5A to 5Y	"	"	"				
			50	44								"					OUT	IN	"	6A to 6Y	"	"	"				
	t _{PHL}	"	"	51	45	IN	OUT						"						"	1A to 1Y	8/	8/	"				
				52	46			IN	OUT				"						"	2A to 2Y	"	"	"				
				53	47					IN	OUT		"						"	3A to 3Y	"	"	"				
				54	48							IN	OUT	"	OUT	IN			"	4A to 4Y	"	"	"				
				55	49								"				OUT	IN	"	5A to 5Y	"	"	"				
				56	50								"					OUT	IN	"	6A to 6Y	"	"	"			
10	t _{PLH}	Same tests and terminal conditions as subgroup 9, except T _C = +125°C.																			9/	9/	"				
	t _{PHL}	Same tests and terminal conditions as subgroup 9, except T _C = +125°C.																			10/	10/	"				
11	Same tests, terminal conditions and limits as for subgroup 10, except T _C = -55°C.																										

- 1/ Pins not referenced are N/C.
- 2/ Device 11 only.
- 3/ I_{IL} limits shall be as follows:

Parameters	Min/Max limits in μ A for circuit		
	A	B	C
I _{IL}	0/-100	0/-100	0/-100

- 4/ Method 3011 of MIL-STD-883 shall be used, except the output 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}.
- 5/ I_O min/max limit for circuits B and C shall be: -30/ -110 mA.
- 6/ Device 12 only.
- 7/ For device type 11; min = 1 ns, max = 8 ns. For device type 12; min = 5 ns, max = 30 ns.
- 8/ For device type 11; min = 1 ns, max = 8 ns. For device type 12; min = 2 ns, max = 12 ns.
- 9/ For device type 11; min = 1 ns, max = 10 ns. For device type 12; min = 5 ns, max = 35 ns.
- 10/ For device type 11; min = 1 ns, max = 10 ns. For device type 12; min = 2 ns, max = 14 ns.

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
- V_{IC} Input clamp voltage
- I_{IN} Current flowing into an input terminal

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	54ALS1000/54ALS37
02	54ALS1002/54ALS28
03	54ALS1003/54ALS38
04	54ALS1008
05	54ALS1010
06	54ALS1011
07	54ALS1020/54ALS40
08	54ALS1032
09	54ALS1004
10	54ALS1005
11	54ALS1034
12	54ALS1035

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		
04	X		
05	X		
06	X		
07	X		
08	X		
09	X		
10	X		
11	X		
12	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 5962-2071)

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>.