INCH-POUND

MIL-M-38510/52E
3 December 2004

SUPERSEDING
MIL-M-38510/52D
30 April 1984

MILITARY SPECIFICATION
MICROCIRCUITS, DIGITAL, CMOS, NOR GATES, MONOLITHIC SILICON, POSITIVE LOGIC

Reactivated after 3 December 2004 and may be used for new and existing designs and acquisitions.

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, CMOS, logic microcircuits. Two product assurance classes and a choice of case outlines, lead finishes, and radiation hardness assurance (RHA) are provided and are reflected in the complete Part or Identifying Number (PIN). For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535 (see 6.3).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:

Device type	Circuit
01	Dual 3-input NOR gate (plus inverter)
02	Quad 2-input NOR gate
03	Dual 4-input NOR gate
04	Triple 3-input NOR gate
51	Dual 3-input NOR gate (plus inverter)
52	Quad 2-input NOR gate
53	Dual 4-input NOR gate
54	Triple 3-input NOR gate

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:

Outline letter	Descriptive designator	Terminals	Package style
A	GDFP5-F14 or CDFP6-F14	14	Flat pack
C	GDIP1-T14 or CDIP2-T14	14	Dual-in-line
D	GDFP1-F14 or CDFP2-F14	14	Flat pack
T	CDFP3-F14	14	Flat pack
X	GDFP5-F14 or CDFP6-F14	14	Flat pack, except A dimension equals 0.1” (2.54 mm) max
Y	GDFP1-F14 or CDFP2-F14	14	Flat pack, except A dimension

1/ As an exception to nickel plate or undercoating paragraph of MIL-PRF-38535, appendix A, for case outlines X and Y only, the leads of bottom brazed ceramic packages (i.e., configuration 2 of case outlines A or D) may have electroless nickel undercoating which is 50 to 200 microinches (1.27 to 5.08 μm) thick provided the lead finish is hot solder dip (i.e., finish letter A) and provided that, after any lead forming, an additional hot solder dip coating is applied which extends from the outer tip of the lead to no more than 0.015 inch (0.38 mm) from the package edge.

2/ For bottom or side brazed packages, case outlines X and Y only, the S_1 dimension may go to .000 inch (.00 mm) minimum.

Comments, suggestions, or questions on this document should be addressed to: Commander, Defense Supply Center Columbus, ATTN: DSCC-VAC, P.O. Box 3990, Columbus, OH 43218-3990, or email CMOS@dscc.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 (V_{DD} - V_{SS}):
Device types 01, 02, 03, and 04 ..... -0.5 V dc to +15.5 V dc
Device types 51, 52, 53, and 54 ..... -0.5 V dc to +18.0 V dc
Input current (each input) ..... ±10 mA
Input voltage range..... (V_{SS} - 0.5 V) ≤ V_I ≤ (V_{DD} + 0.5 V)
Storage temperature range (T_{STG})..... -65° to +175°C
Maximum power dissipation (P_D) ..... 200 mW
Lead temperature (soldering, 10 seconds) ..... +300°C
Thermal resistance, junction to case (θ_{JC})..... See MIL-STD-1835
Junction temperature (T_J) ..... 175°C

1.4 Recommended operating conditions.

Supply voltage range (V_{DD} - V_{SS}):

Device types 01, 02, 03, and 04 ..... 4.5 V dc to 12.5 V dc
Device types 51, 52, 53, and 54 ..... 4.5 V dc to 15.0 V dc
Input low voltage range (V_{IL}):
Device types 01, 02, 03, and 04 ..... V_{OL} = 10% V_{DD}, V_{OH} = 90% V_{DD}
0.0 V to 0.85 V dc @ V_{DD} = 5.0 V dc
0.0 V to 2.0 V dc @ V_{DD} = 10.0 V dc
0.0 V to 2.1 V dc @ V_{DD} = 12.5 V dc
Device types 51, 52, 53, and 54 ..... V_{OL} = 10% V_{DD}, V_{OH} = 90% V_{DD}
0.0 V to 1.5 V dc @ V_{DD} = 5.0 V dc
0.0 V to 2.0 V dc @ V_{DD} = 10.0 V dc
0.0 V to 4.0 V dc @ V_{DD} = 15.0 V dc
Input high voltage range (V_{IH}):
Device types 01, 02, 03, and 04 ..... V_{OL} = 10% V_{DD}, V_{OH} = 90% V_{DD}
3.95 V to 5.0 V dc @ V_{DD} = 5.0 V dc
8.0 V to 10.0 V dc @ V_{DD} = 10.0 V dc
10 V to 12.5 V dc @ V_{DD} = 12.5 V dc
Device types 51, 52, 53, and 54 ..... V_{OL} = 10% V_{DD}, V_{OH} = 90% V_{DD}
3.5 V to 5.0 V dc @ V_{DD} = 5.0 V dc
8.0 V to 10.0 V dc @ V_{DD} = 10.0 V dc
11.0 V to 15.0 V dc @ V_{DD} = 15.0 V dc
Load capacitance ..... 50 pF maximum
Ambient operating temperature range (T_A) ..... -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 SPECIFICATION

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

DEPARTMENT OF DEFENSE STANDARDS

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

(Copies of these documents are available online at http://assist.daps.dla.mil/quicksearch/ or www.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 document 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.

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. Although eutectic die bonding is preferred, epoxy die bonding may be performed. However, the resin used shall be Dupont 5504 Conductive Silver Paste, or equivalent, which is cured at 200°C ±10°C for a minimum of 2 hours. The use of equivalent epoxies or cure cycles shall be approved by the qualifying activity. Equivalency shall be demonstrated in data submitted to the qualifying activity for verification.

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

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

3.3.3 Switching time test circuit and waveforms The switching time test circuit and waveforms shall be as specified on figure 3.

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

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

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.

3.7.1 Radiation hardness assurance identifier. The radiation hardness assurance identifier shall be in accordance with MIL-PRF-38535 and 4.5.4 herein.

3.8 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 36 (see MIL-PRF-38535, appendix A).

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions V_{SS} = 0 V -55°C ≤ T_A ≤ +125°C Unless otherwise specified		Device type	Limits		Unit
					Min	Max	
Positive clamping input to V_{DD}	$V_{IC\ (POS)}$	T_A = +25°C, V_{DD} = GND V_{SS} = Open, Output = Open I_{IN} = 1 mA		All		1.5	V dc
Negative clamping input to V_{SS}	$V_{IC\ (NEG)}$	T_A = +25°C, V_{DD} = Open V_{SS} = GND, Output = Open I_{IN} = -1 mA		All		-6.0	V dc
Quiescent supply current	I_{SS}	All combinations of inputs	V_{DD} = 15 V dc	01, 02, 03, 04		-750	nA
			V_{DD} = 18 V dc	51, 52, 53, 54			
High level output voltage	V_{OH1}	V_{DD} = 4.5 V dc, I_{OH} = - 0.1 mA All inputs = V_{IL} (see table III notes)		01, 02, 03, 04	2.5		V dc
	V_{OH2}	V_{DD} = 5 V dc, I_{OH} = -0.13 mA All inputs = V_{IL} (see table III notes)		01, 02, 03, 04	4.2		
	V_{OH3}	V_{DD} = 5 V dc, I_{OH} = 0.0 A All inputs = V_{IL} (see table III notes)		01, 02, 03, 04	4.95		
	V_{OH4}	V_{DD} = 12.5 V dc, I_{OH} = 0.0 A All inputs = V_{IL} (see table III notes)		01, 02, 03, 04	11.25		V dc
	V_{OH5}	V_{DD} = 15 V dc, I_{OH} = 0.0 A All inputs = GND (see table III)		51, 52, 53, 54	14.95		
Low level output voltage	V_{OL1}	V_{DD} = 5 V dc, I_{OL} = 0.23 mA Any one input = V_{IH} (see table III notes)		01, 02, 03, 04		0.5	V dc
	V_{OL2}	V_{DD} = 5 V dc, I_{OL} = 0.28 mA Any one input = V_{IH} (see table III)		01, 02, 03, 04		0.7	
	V_{OL3}	V_{DD} = 5 V dc, I_{OL} = 0.0 A Any one input = V_{IH} (see table III notes)		01, 02, 03, 04		0.05	
	V_{OL4}	V_{DD} = 12.5 V dc, I_{OL} = 0.0 A Any one input = V_{IH} (see table III notes)		01, 02, 03, 04		1.25	
	V_{OL5}	V_{DD} = 15 V dc, I_{OL} = 0.56 mA Any one input = V_{IH} (see table III notes)		01, 02, 03, 04		0.5	
	V_{OL6}	V_{DD} = 15 V dc, I_{OL} = 0.0 A Input = 15 V (see table III notes and 4.4.1c)		51, 52, 53, 54		0.05	
Input high voltage	V_{IH1}	V_{DD} = 5 V dc Any one input = 3.5 V dc All other inputs = 1.5 V V_O = 0.5 V, $\lvert I_O \rvert \leq 1\mu A$		51, 52, 53, 54	3.5		V dc
	V_{IH2}	V_{DD} = 10 V dc Any one input = 7.0 V dc All other inputs = 3.0 V V_O = 1.0 V, $\lvert I_O \rvert \leq 1\mu A$		51, 52, 53, 54	7.0		V dc
	V_{IH3}	V_{DD} = 15 V dc Any one input = 11.0 V dc All other inputs = 4.0 V V_O = 0.5 V, $\lvert I_O \rvert \leq 1\mu A$		51, 52, 53, 54	11.0		V dc

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions V_{SS} = 0 V -55°C ≤ T_A ≤ +125°C Unless otherwise specified		Device type	Limits		Unit
					Min	Max	
Input low voltage	V_{IL1}	V_{DD} = 5 V dc All inputs = 1.5 V dc V_O = 4.5 V dc, $\lvert I_O \rvert \leq 1\mu A$		51, 52, 53, 54		1.5	V dc
	V_{IL2}	V_{DD} = 10 V dc All inputs = 3.0 V dc V_O = 9.0 V dc, $\lvert I_O \rvert \leq 1\mu A$		51, 52, 53, 54		3.0	V dc
	V_{IL3}	V_{DD} = 15 V dc All inputs = 4.0 V dc V_O = 13.5 V dc, $\lvert I_O \rvert \leq 1\mu A$		51, 52, 53, 54		4.0	V dc
Output low (sink) current	I_{OL1}	V_{DD} = 5 V dc V_{IN} = 5.0 V dc V_{OL} = 0.4 V dc		51, 52, 53, 54	0.36		mA dc
	I_{OL2}	V_{DD} = 15 V dc V_{IN} = 15.0 V dc V_{OL} = 1.5 V dc		51, 52, 53, 54	2.4		mA dc
Output high (source) current	I_{OH1}	V_{DD} = 5 V dc All inputs = GND V_{OH} = 4.6 V dc		51, 52, 53, 54	-0.36		mA dc
	I_{OH2}	V_{DD} = 15 V dc All inputs = GND V_{OH} = 13.5 V dc		51, 52, 53, 54	-2.4		mA dc
Input leakage current, high	I_{IH} 1/	Measure inputs sequentially	V_{DD} = 15 V dc	01, 02, 04		100.0	nA
				03		45.0	
			V_{DD} = 18 V dc	51, 53		45.0	
				52, 54		100.0	
Input leakage current, low	I_{IL} 1/	Measure inputs sequentially	V_{DD} = 15 V dc	01, 02, 04		-100.0	nA
				03		-45.0	
			V_{DD} = 18 V dc	51, 53		-45.0	
				52, 54		-100.0	
Input capacitance	C_i	V_{DD} = 0 V dc, f = 1 MHz, T_A = 25°C		All		12	pF
Propagation delay time, high level to low level	t_{PHL}	V_{DD} = 5 V dc, C_L = 50 pF (See figure 3)		All	10	315	ns
Propagation delay time, low level to high level	t_{PLH}			01, 51	10	415	
				02, 52	13	315	
				03, 04, 53, 54	10	315	
Transition time, high level to low level	t_{THL}	V_{DD} = 5 V dc, C_L = 50 pF (See figure 3)		All	10	450	ns
Transition time, low level to high level	t_{TLH}			01, 51	10	675	
				02, 03, 04, 52, 53, 54	10	615	

1/ Input current at one input node.

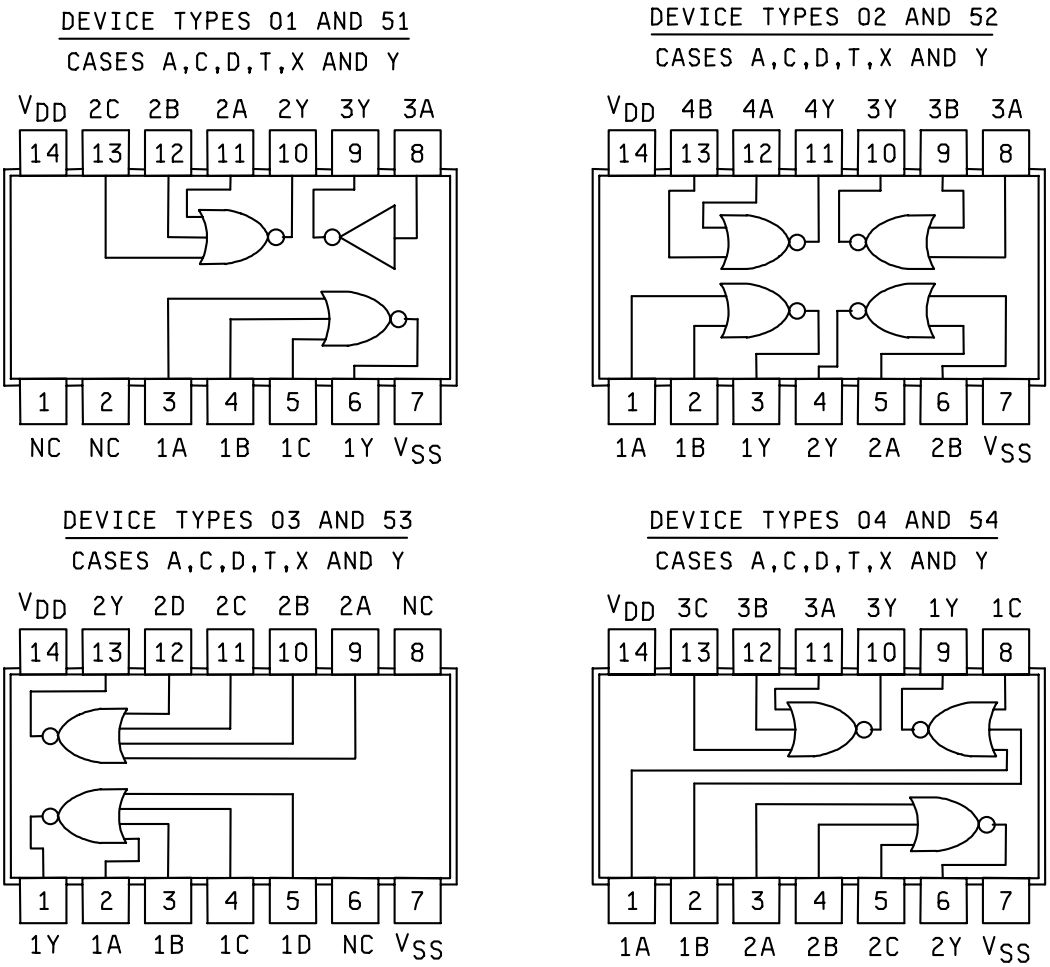


FIGURE 1. Logic diagrams and terminal connections.

Device types 01, 04, 51, and 54

Inputs			Output
A	B	C	Y
L	L	L	H
H	L	L	L
L	H	L	L
H	H	L	L
L	L	H	L
H	L	H	L
L	H	H	L
H	H	H	L

Positive logic $Y = \overline{A+B+C}$
(01 inverter $3Y = \overline{3A}$)

Device types 02 and 52

Inputs		Output
A	B	Y
L	L	H
H	L	L
L	H	L
H	H	L

Positive logic $Y = \overline{A+B}$

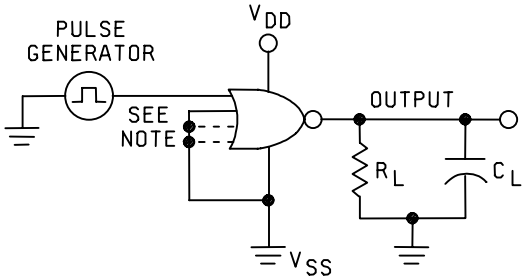
Device types 03 and 53

Inputs				Output
A	B	C	D	Y
L	L	L	L	H
H	L	L	L	L
L	H	L	L	L
H	H	L	L	L
L	L	H	L	L
H	L	H	L	L
L	H	H	L	L
H	H	H	L	L
L	L	L	H	L
H	L	L	H	L
L	H	L	H	L
H	H	L	H	L
L	L	H	H	L
H	L	H	H	L
L	H	H	H	L
H	H	H	H	L

Positive logic $Y = \overline{A+B+C+D}$

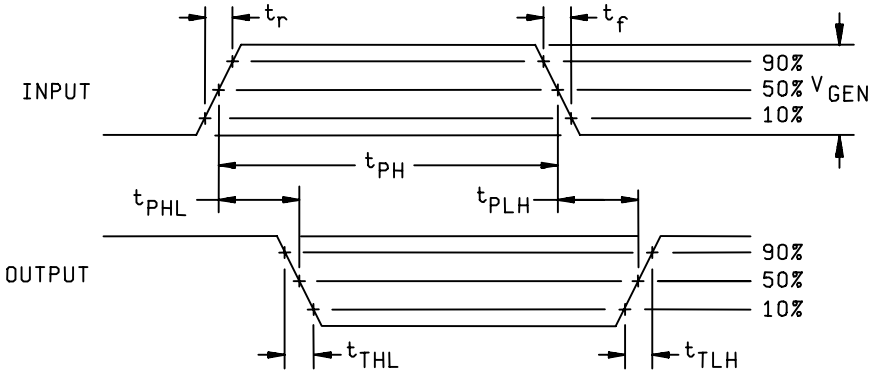
H = High level voltage
L = Low level voltage

FIGURE 2. Truth tables and logic equations.



TEST CIRCUIT

R_L = 200 kΩ ±10%
C_L = 50 pF ±5%
INCLUDES WIRING AND PROBE CAPACITANCE



DYNAMIC TEST WAVEFORMS

INPUT PULSE
V_{GEN} = V_{DD} ±1.0%
t_{PH} = 1.0 ±0.1 μs
t_r AND t_f = 10 ±2 ns
PULSE REPETITION PERIOD = 5.0 ±1 μs

NOTE: All unused inputs must be tied to V_{SS}.

FIGURE 3. Switching time test circuit and waveforms.

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 affect 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. Delete the sequence specified as interim (pre-burn-in) electrical parameters through interim (post-burn-in) electrical parameters of table IA of MIL-PRF-38535 and substitute lines 1 through 7 of table II herein.

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

(1) Unless otherwise specified in the manufacturers QM plan for static tests (test condition A), ambient temperature (T_A) shall be +125°C minimum. Test duration for each static test shall be 24 hours minimum for class S devices and in accordance with table I of method 1015 for class B devices.

i. For static burn-in I, all inputs shall be connected to 0.0 V.

ii. For static burn-in II, all inputs shall be connected to V_{DD}.

iii. Except for V_{DD} and V_{SS}, the terminal shall be connected through resistors whose value is 2 kΩ to 47 kΩ. The actual measured value of the resistor selected shall not exceed ±20% of its branded value due to use, heat or age.

iv. Output may be open or connected to $V_{DD}/2$.

v. V_{DD} = 12.5 V minimum, 15 V maximum for device types 01, 02, 03, and 04.
V_{DD} = 15 V minimum, 18 V maximum for device types 51, 52, 53, and 54.
$V_{DD}/2 = V_{DD}/2 \pm 1.0$ V for all devices.
V_{SS} = 0.0 V.

(2) Unless otherwise specified in the manufacturers QM plan for dynamic test (test condition D), ambient temperature shall be +125°C minimum. Test duration shall be in accordance with table I of method 1015.

i. Except for V_{DD} and V_{SS}, the terminals shall be connected through resistors whose value is 2 kΩ to 47 kΩ. The actual measured value of the resistor selected shall not exceed ±20% of its branded value due to use, heat or age.

ii. Input signal requirements: Square wave, 50% duty cycle; 25 kHz < PRR < 1 MHz; t_{TLH} and t_{THL} < 1 μs. Voltage level: Minimum = V_{SS} – 0.5 V, +10% V_{DD};
Maximum = V_{DD} + 0.5 V, -10% V_{DD}.

iii. V_{DD} = 12.5 V minimum, 15 V maximum for device types 01, 02, 03, and 04.
V_{DD} = 15 V minimum, 18 V maximum for device types 51, 52, 53, and 54.
$V_{DD}/2 = V_{DD}/2 \pm 1.0$ V.
V_{SS} = 0.0 V.

d. Interim and final electrical test parameters shall be as specified in table II.

e. For class S devices, post dynamic burn-in, or class B devices, post static burn-in, electrical parameter measurements may, at the manufacturer's option, be performed separately or included in the final electrical parameter requirements.

TABLE II. Electrical test requirements.

Line no.	MIL-PRF-38535 test requirements	Class S device 1/			Class B device 1/		
		Ref. par.	Table III Subgroups 2/	Table IV delta limits 3/	Ref. par.	Table III subgroups 2/	Table IV delta limits 3/
1	Interim electrical parameters		1			1	
2	Static burn-in I (method 1015)	4.2c 4.5.2					
3	Same as line 1		1	Δ			
4	Static burn-in II (method 1015)	4.2c 4.5.2			4.2c 4.5.2	4/	
5	Same as line 1	4.2e	1*	Δ	4.2e	1*	Δ
6	Dynamic burn-in (method 1015)	4.2c 4.5.2					
7	Same as line 1	4.2e	1*	Δ			
8	Final electrical parameters (method 5004)		1*, 2, 3, 9			1*, 2, 3, 9	
9	Group A test requirements (method 5005)	4.4.1	1, 2, 3, 4, 9, 10, 11		4.4.1	1, 2, 3, 4, 9, 10, 11	
10	Group B test when using method 5005 QCI option	4.4.2	1, 2, 3, 9, 10, 11	Δ			
11	Group C end-point electrical parameters (method 5005)				4.4.3	1, 2, 3	Δ
12	Group D end-point electrical parameters (method 5005)	4.4.4	1, 2, 3		4.4.4	1, 2, 3	

1/ Blank spaces indicate tests are not applicable.

2/ * indicates PDA applies to subgroup 1 (see 4.2.1).

3/ Δ indicates delta limits shall be required only on table III subgroup 1, where specified, and the delta values shall be computed with reference to the previous interim electrical parameters.

4/ The device manufacturer may at his option either perform delta measurements or within 24 hours after burn-in (or removal of bias) perform the final electrical parameter measurements.

4.2.1 Percent defective allowable (PDA).

a. The PDA for class S devices shall be 5 percent for static burn-in and 5 percent for dynamic burn-in, based on the exact number of devices submitted to each separate burn-in.

b. Static burn-in I and II failure shall be cumulative for determining the PDA.

c. The PDA for class B devices shall be in accordance with MIL-PRF-38535 for static burn-in. Dynamic burn-in is not required.

d. Those devices whose measured characteristics, after burn-in, exceed the specified delta (Δ) limits or electrical parameter limits specified in table III, subgroup 1, are defective and shall be removed from the lot. The verified failures divided by the total number of devices in the lot initially submitted to burn-in shall be used to determine the percent defective for the lot and the lot shall be accepted or rejected based on the specified PDA.

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

4.3.1 Qualification extension. When authorized by the qualifying activity, if a manufacturer qualifies to a 51, 52, 53, or 54 device type which is manufactured identically to a 01, 02, 03, or 04 device type on this specification, then the 01, 02, 03, or 04 device type may be part I qualified by conducting only group A electrical tests and any electrical tests specified as additional group C subgroups and submitting data 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, D, and E inspections (see 4.4.1 through 4.4.5).

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 performed in accordance with table II herein.

b. Subgroups 5, 6, 7, and 8 shall be omitted.

c. Subgroup 4 (C_I measurement) shall be measured only for initial qualification and after process or design changes that may affect input capacitance. Capacitance shall be measured between the designated terminal and V_{SS} at a frequency of 1 MHz.

d. Subgroups 9 and 11 shall be measured only for initial qualification and after process or design changes which may affect dynamic performance.

e. When device types 01 through 04 are qualified by extension (see 4.3.1), these device types will be inspected (QCI) according to the requirements for device types 51 through 54, respectively.

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. Delta limits shall apply only to subgroup 1 of group C inspection and shall consist of tests specified in table IV 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.

c. When device types 01 through 04 are qualified by extension (see 4.3.1), these device types will be inspected (QCI) according to the requirements for device types 51 through 54, respectively.

TABLE III. Group A inspection for device type 01.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	NC	NC	1A	1B	1C	1Y	V_{SS}	3A	3Y	2Y	2A	2B	2C	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IC}		1			1mA											GND	1A		1.5					Vdc
(POS)		2				1mA										"	1B		"					"
"		3					1mA									"	1C		"					"
"		4								1mA						"	3A		"					"
"		5											1mA			"	2A		"					"
"		6												1mA		"	2B		"					"
"		7													1mA	"	2C		"					"
V_{IC}		8			-1mA				GND								1A		-6					"
(NEG)		9				-1mA			"								1B		"					"
"		10					-1mA		"								1C		"					"
"		11							"	-1mA							3A		"					"
"		12							"				-1mA				2A		"					"
"		13							"					-1mA			2B		"					"
"		14							"						-1mA		2C							"
I_{SS}	3005	15			15.0V	GND	GND		"	15.0V			15.0V	GND	GND	15.0V	V_{SS}		-25		-750			nA
"	2/	16			GND	15.0V	GND		"	15.0V			GND	15.0V	GND	"	"		"		"			"
"	"	17			GND	GND	15.0V		"	15.0V			GND	GND	15.0V	"	"		"		"			"
"	"	18			GND	GND	GND		"	GND			GND	GND	GND	"	"		"		"			"
V_{OH1}	3006	19			3/	3/	3/	4/	"	4.5V			4.5V	4.5V	4.5V	4.5V	1Y	2.5		2.5		2.5		Vdc
"	"	20			4.5V	4.5V	4.5V		"	4.5V		4/	3/	3/	3/	4.5V	2Y	2.5		2.5		2.5		"
"	"	21			4.5V	4.5V	4.5V		"	3/	4/		4.5V	4.5V	4.5V	4.5V	3Y	2.5		2.5		2.5		"
V_{OH2}	"	22			3/	3/	3/	5/	"	5.0V			5.0V	5.0V	5.0V	5.0V	1Y	4.2		4.2		4.2		"
"	"	23			5.0V	5.0V	5.0V		"	5.0V		5/	3/	3/	3/	"	2Y	4.2		4.2		4.2		"
"	"	24			5.0V	5.0V	5.0V		"	3/	5/		5.0V	5.0V	5.0V	"	3Y	4.2		4.2		4.2		"
V_{OH3}	"	25			3/	3/	3/		"	5.0V			5.0V	5.0V	5.0V	"	1Y	4.95		4.95		4.95		"
"	"	26			5.0V	5.0V	5.0V		"	5.0V			3/	3/	3/	"	2Y	4.95		4.95		4.95		"
"	"	27			5.0V	5.0V	5.0V		"	3/			5.0V	5.0V	5.0V	"	3Y	4.95		4.95		4.95		"
V_{OH4}	"	28			6/	6/	6/		"	12.5V			12.5V	12.5V	12.5V	12.5V	1Y	11.25		11.25		11.25		"
"	"	29			12.5V	12.5V	12.5V		"	12.5V			6/	6/	6/	12.5V	2Y	11.25		11.25		11.25		"
"	"	30			12.5V	12.5V	12.5V		"	6/			12.5V	12.5V	12.5V	12.5V	3Y	11.25		11.25		11.25		"
V_{OL1}	3007	31			7/	GND	GND	8/	GND	GND			GND	GND	GND	5.5V	1Y		0.40		0.5		0.40	"
"	"	32			GND	7/	GND	8/	"	"			GND	"	"	"	1Y		"		"		"	"
"	"	33			"	GND	7/	8/	"	"			GND	"	"	"	1Y		"		"		"	"
"	"	34			"	"	GND		"	"		8/	7/	"	"	"	2Y		"		"		"	"
"	"	35			"	"	"		"	"		8/	GND	7/	"	"	2Y		"		"		"	"
"	"	36			"	"	"		"	"		8/	"	GND	7/	"	2Y		"		"		"	"
"	"	37			"	"	"		"	7/	8/		"	"	GND	"	3Y		"		"		"	"
V_{OL2}	"	38			7/	"	"	15/	"	GND			"	"	"	5.0V	1Y		0.7		0.7		0.7	"
"	"	39			GND	7/	"	15/	"	"			"	"	"	"	1Y		"		"		"	"
"	"	40			"	GND	7/	15/	"	"			"	"	"	"	1Y		"		"		"	"
"	"	41			"	"	GND		"	"		15/	7/	"	"	"	2Y		"		"		"	"
"	"	42			"	"	"		"	"		15/	GND	7/	"	"	2Y		"		"		"	"
"	"	43			"	"	"		"	"		15/	"	GND	7/	"	2Y		"		"		"	"
"	"	44			"	"	"		"	7/	15/		"	"	GND	"	3Y		"		"		"	"

See notes at end of device type 04.

TABLE III. Group A inspection for device type 01 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	NC	NC	1A	1B	1C	1Y	V_{SS}	3A	3Y	2Y	2A	2B	2C	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{OL3}	3007	45			7/	GND	GND		GND	GND			GND	GND	GND	5.0V	1Y		50		50		50	mV
"	"	46			GND	7/	"		"	"			"	"	"	"	1Y		"		"		"	"
"	"	47			"	GND	7/		"	"			"	"	"	"	1Y		"		"		"	"
"	"	48			"	"	GND		"	"			7/	"	"	"	2Y		"		"		"	"
"	"	49			"	"	"		"	"			GND	7/	"	"	2Y		"		"		"	"
"	"	50			"	"	"		"	"			"	GND	7/	"	2Y		"		"		"	"
"	"	51			"	"	"		"	7/			"	"	GND	"	3Y		"		"		"	"
V_{OL4}	"	52			9/	"	"		"	GND			"	"	"	12.5V	1Y		1.25		1.25		1.25	Vdc
"	"	53			GND	9/	"		"	"			"	"	"	"	1Y		"		"		"	"
"	"	54			"	GND	9/		"	"			"	"	"	"	1Y		"		"		"	"
"	"	55			"	"	GND		"	"			9/	"	"	"	2Y		"		"		"	"
"	"	56			"	"	"		"	"			GND	9/	"	"	2Y		"		"		"	"
"	"	57			"	"	"		"	"			"	GND	9/	"	2Y		"		"		"	"
"	"	58			"	"	"		"	9/			"	GND	GND	"	3Y		"		"		"	"
V_{OL5}	"	59			7/	7/	7/	10/	"				"	GND	GND	5.0V	1Y		0.40		0.5		0.40	"
"	"	60			GND	GND	GND		"			10/	7/	7/	7/	5.0V	2Y		0.40		0.5		0.40	"
I_{IL} 11/	3009	61			GND	GND	GND		GND	GND			GND	GND	GND	15.0V	All inputs together		-700					nA
"	"	62			"	"	"		"	"			"	"	"	"	1A		-100.0		-100.0			"
"	"	63			"	"	"		"	"			"	"	"	"	1B		"		"			"
"	"	64			"	"	"		"	"			"	"	"	"	1C		"		"			"
"	"	65			"	"	"		"	"			"	"	"	"	2A		"		"			"
"	"	66			"	"	"		"	"			"	"	"	"	2B		"		"			"
"	"	67			"	"	"		"	"			"	"	"	"	2C		"		"			"
"	"	68			"	"	"		"	"			"	"	"	"	3A		"		"			"
I_{IH} 11/	3010	69			15.0V	15.0V	15.0V		"	15.0V			15.0V	15.0V	15.0V	"	All inputs together		700					nA
"	"	70			15.0V	GND	GND		"	GND			GND	GND	GND	"	1A		100.0		100.0			"
"	"	71			GND	15.0V	GND		"	"			GND	"	"	"	1B		"		"			"
"	"	72			"	GND	15.0V		"	"			GND	"	"	"	1C		"		"			"
"	"	73			"	"	GND		"	"			15.0V	"	"	"	2A		"		"			"
"	"	74			"	"	"		"	"			GND	15.0V	"	"	2B		"		"			"
"	"	75			"	"	"		"	"			GND	GND	15.0V	"	2C		"		"			"
"	"	76			"	"	"		"	15.0V			GND	GND	GND	"	3A		"		"			"
																		Subgroup 4 T_A = 25°C						
																		Min	Max					
C_i	3012	77			12/				GND							GND	1A		12					pF
"	"	78				12/			"							"	1B		"					"
"	"	79					12/		"							"	1C		"					"
"	"	80							"				12/			"	2A		"					"
"	"	81							"					12/		"	2B		"					"
"	"	82							"						12/	"	2C		"					"
"	"	83							"	12/						"	3A		"					"

See notes at end of device type 04.

TABLE III. Group A inspection for device type 01 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Test No.	NC	NC	1A	1B	1C	1Y	V_{SS}	3A	3Y	2Y	2A	2B	2C	V_{DD}		Min	Max	Min	Min	Max	Min	
t_{PHL}	3003	84			13/	GND	GND	14/	GND	GND			GND	GND	GND	5.0V	1A to 1Y	10	210	14	315	10	210	ns
"	Fig. 3	85			GND	13/	GND	14/	"	"			GND	"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	86			"	GND	13/	14/	"	"			GND	"	"	"	1C to 1Y	"	"	"	"	"	"	"
"	"	87			"	"	GND		"	"		14/	13/	"	"	"	2A to 2Y	"	"	"	"	"	"	"
"	"	88			"	"	"		"	"		14/	GND	13/	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	89			"	"	"		"	"		14/	"	GND	13/	"	2C to 2Y	"	"	"	"	"	"	"
"	"	90			"	"	"		"	13/	14/		"	"	GND	"	3A to 3Y	"	"	"	"	"	"	"
t_{PLH}	"	91			13/	"	"	14/	"	GND			"	"	"	"	1A to 1Y	10	275	14	415	10	275	"
"	"	92			GND	13/	"	14/	"	"			"	"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	93			"	GND	13/	14/	"	"			"	"	"	"	1C to 1Y	"	"	"	"	"	"	"
"	"	94			"	"	GND		"	"		14/	13/	"	"	"	2A to 2Y	"	"	"	"	"	"	"
"	"	95			"	"	"		"	"		14/	GND	13/	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	96			"	"	"		"	"		14/	"	GND	13/	"	2C to 2Y	"	"	"	"	"	"	"
"	"	97			"	"	"		"	13/	14/		"	"	GND	"	3A to 3Y	"	"	"	"	"	"	"
t_{THL}	3004	98			13/	GND	GND	14/	"	GND			"	GND	GND	"	1Y	10	300	14	450	10	300	"
"	Fig. 3	99			GND	13/	GND	14/	"	"			GND	"	"	"	1Y	"	"	"	"	"	"	"
"	"	100			"	GND	13/	14/	"	"			GND	"	"	"	1Y	"	"	"	"	"	"	"
"	"	101			"	"	GND		"	"		14/	13/	"	"	"	2Y	"	"	"	"	"	"	"
"	"	102			"	"	"		"	"		14/	GND	13/	"	"	2Y	"	"	"	"	"	"	"
"	"	103			"	"	"		"	"		14/	"	GND	13/	"	2Y	"	"	"	"	"	"	"
"	"	104			"	"	"		"	13/	14/		"	"	GND	"	3Y	"	"	"	"	"	"	"
t_{TLH}	"	105			13/	"	"	14/	"	GND			"	"	"	"	1Y	10	450	14	675	10	450	"
"	"	106			GND	13/	"	14/	"	"			"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	107			"	GND	13/	14/	"	"			"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	108			"	"	GND		"	"		14/	13/	"	"	"	2Y	"	"	"	"	"	"	"
"	"	109			"	"	"		"	"		14/	GND	13/	"	"	2Y	"	"	"	"	"	"	"
"	"	110			"	"	"		"	"		14/	"	GND	13/	"	2Y	"	"	"	"	"	"	"
"	"	111			"	"	"		"	13/	14/		"	GND	GND	"	3Y	"	"	"	"	"	"	"

See notes at end of device type 04.

TABLE III. Group A inspection for device type 02.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	1A	1B	1Y	2Y	2A	2B	V_{SS}	3A	3B	3Y	4Y	4A	4B	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IC}		1	1 mA													GND	1A		1.5					Vdc
(pos)		2		1 mA												"	1B		"					"
"		3					1 mA									"	2A		"					"
"		4						1 mA								"	2B		"					"
"		5								1 mA						"	3A		"					"
"		6									1 mA					"	3B		"					"
"		7												1 mA		"	4A		"					"
"		8													1 mA	"	4B		"					"
V_{IC}		9	-1 mA						GND								1A		-6					"
(neg)		10		-1 mA					"								1B		"					"
"		11					-1 mA		"								2A		"					"
"		12						-1 mA	"								2B		"					"
"		13							"	-1 mA							3A		"					"
"		14							"		-1 mA						3B		"					"
"		15							"					-1 mA			4A		"					"
"		16							"						-1 mA		4B		"					"
I_{SS}	3005	17	15.0V	GND			GND	15.0V	"	15.0V	GND			GND	15.0V	15.0V	V_{SS}		-25.0		-750			nA
"	2/	18	GND	15.0V			15.0V	GND	"	GND	15.0V			15.0V	GND	15.0V	V_{SS}		-25.0		-750			nA
"		19	GND	GND			GND	GND	"	GND	GND			GND	GND	15.0V	V_{SS}		-25.0		-750			nA
V_{OH1}	3006	20	3/	3/	4/		4.5V	4.5V	"	4.5V	4.5V			4.5V	4.5V	4.5V	1Y	2.5		2.5		2.5		Vdc
"	"	21	4.5V	4.5V		4/	3/	3/	"	4.5V	4.5V			4.5V	4.5V	"	2Y	"		"		"		"
"	"	22	"	"			4.5V	4.5V	"	3/	3/	4/		4.5V	4.5V	"	3Y	"		"		"		"
"	"	23	"	"			4.5V	4.5V	"	4.5V	4.5V		4/	3/	3/	"	4Y	"		"		"		"
V_{OH2}	"	24	3/	3/	5/		5.0V	5.0V	"	5.0V	5.0V			5.0V	5.0V	5.0V	1Y	4.2		4.2		4.2		"
"	"	25	5.0V	5.0V		5/	3/	3/	"	5.0V	5.0V			5.0V	5.0V	"	2Y	"		"		"		"
"	"	26	5.0V	5.0V			5.0V	5.0V	"	3/	3/	5/		5.0V	5.0V	"	3Y	"		"		"		"
"	"	27	5.0V	5.0V			5.0V	5.0V	"	5.0V	5.0V		5/	3/	3/	"	4Y	"		"		"		"
V_{OH3}	"	28	3/	3/			5.0V	5.0V	"	5.0V	5.0V			5.0V	5.0V	"	1Y	4.95		4.95		4.95		"
"	"	29	5.0V	5.0V			3/	3/	"	5.0V	5.0V			5.0V	5.0V	"	2Y	"		"		"		"
"	"	30	5.0V	5.0V			5.0V	5.0V	"	3/	3/			5.0V	5.0V	"	3Y	"		"		"		"
V_{OH3}	3006	31	5.0V	5.0V			5.0V	5.0V	GND	5.0V	5.0V			3/	3/	5.0V	4Y	4.95		4.95		4.95		Vdc
V_{OH4}	"	32	6/	6/			12.5V	12.5V	"	12.5V	12.5V			12.5V	12.5V	12.5V	1Y	11.25		11.25		11.25		"
"	"	33	12.5V	12.5V			6/	6/	"	12.5V	12.5V			12.5V	12.5V	"	2Y	"		"		"		"
"	"	34	12.5V	12.5V			12.5V	12.5V	"	6/	6/			12.5V	12.5V	"	3Y	"		"		"		"
"	"	35	12.5V	12.5V			12.5V	12.5V	"	12.5V	12.5V			6/	6/	"	4Y	"		"		"		"
V_{OL1}	3007	36	7/	GND	8/		GND	GND	"	GND	GND			GND	GND	5.5V	1Y		0.40		0.50		0.40	"
"	"	37	GND	7/	8/		GND	GND	"	"	"			"	"	"	1Y		"		"		"	"
"	"	38	"	GND		8/	7/	GND	"	"	"			"	"	"	2Y		"		"		"	"
"	"	39	"	"		8/	GND	7/	"	"	"			"	"	"	2Y		"		"		"	"
"	"	40	"	"			"	GND	"	7/	"	8/		"	"	"	3Y		"		"		"	"
"	"	41	"	"			"	"	"	GND	7/	8/		"	"	"	3Y		"		"		"	"
"	"	42	"	"			"	"	"	"	GND		8/	7/	"	"	4Y		"		"		"	"
"	"	43	"	"			"	"	"	"	"		8/	GND	7/	"	4Y		"		"		"	"
V_{OL2}	"	44	7/	"	15/		"	GND	"	"	"			"	GND	5.0V	1Y		0.70		0.70		0.70	"
"	"	45	GND	7/	15/		"	GND	"	"	"			"	"	"	1Y		"		"		"	"
"	"	46	"	GND		15/	7/	GND	"	"	"			"	"	"	2Y		"		"		"	"
"	"	47	"	"		15/	GND	7/	"	"	"			"	"	"	2Y		"		"		"	"
"	"	48	"	"			"	GND	"	7/	"	15/		"	"	"	3Y		"		"		"	"
"	"	49	"	"			"	"	"	GND	7/	15/		"	"	"	3Y		"		"		"	"
"	"	50	"	"			"	"	"	GND	GND		15/	7/	"	"	4Y		"		"		"	"
"	"	51	"	"			"	"	"	GND	GND		15/	GND	7/	"	4Y		"		"		"	"

See notes at end of device type 04.

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

Symbol	MIL-STD-883 method	Cases A,C,D T, X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	1A	1B	1Y	2Y	2A	2B	V_{SS}	3A	3B	3Y	4Y	4A	4B	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{OL3}	3007	52	7/	GND			GND	GND	GND	GND	GND			GND	GND	5.0V	1Y		50		50		50	mV
"	"	53	GND	7/			GND	GND	"	"	"			"	"	"	1Y		"		"		"	"
"	"	54	"	GND			7/	GND	"	"	"			"	"	"	2Y		"		"		"	"
"	"	55	"	"			GND	7/	"	"	"			"	"	"	2Y		"		"		"	"
"	"	56	"	"			"	GND	"	7/	"			"	"	"	3Y		"		"		"	"
"	"	57	"	"			"	"	"	GND	7/			"	"	"	3Y		"		"		"	"
"	"	58	"	"			"	"	"	"	GND			7/	"	"	4Y		"		"		"	"
"	"	59	"	"			"	"	"	"	"			GND	7/	"	4Y		"		"		"	"
V_{OL4}	3007	60	9/	GND			GND	GND	GND	GND	GND			GND	GND	12.5V	1Y		1.25		1.25		1.25	Vdc
"	"	61	GND	9/			GND	GND	"	"	"			"	"	"	1Y		"		"		"	"
"	"	62	"	GND			9/	GND	"	"	"			"	"	"	2Y		"		"		"	"
"	"	63	"	"			GND	9/	"	"	"			"	"	"	2Y		"		"		"	"
"	"	64	"	"			"	GND	"	9/	"			"	"	"	3Y		"		"		"	"
"	"	65	"	"			"	"	"	GND	9/			"	"	"	3Y		"		"		"	"
"	"	66	"	"			"	"	"	"	GND			9/	"	"	4Y		"		"		"	"
"	"	67	"	"			"	"	"	"	"			GND	9/	"	4Y		"		"		"	"
V_{OL5}	"	68	7/	7/	10/		"	"	"	"	"			"	GND	5.0V	1Y		0.40		0.5		0.40	"
"	"	69	GND	GND		10/	7/	7/	"	"	"			"	GND	"	2Y		"		"		"	"
"	"	70	"	"			GND	GND	"	7/	7/	10/		"	GND	"	3Y		"		"		"	"
"	"	71	"	"			"	"	"	GND	GND		10/	7/	7/	"	4Y		"		"		"	"
I_{IL}	3009 11/	72	"	"			"	"	"	"	"			GND	GND	15.0V	All inputs together		-800					nA
"	"	73	"	"			"	"	"	"	"			"	"	"	1A		-100.0		-100.0			"
"	"	74	"	"			"	"	"	"	"			"	"	"	1B		"		"			"
"	"	75	"	"			"	"	"	"	"			"	"	"	2A		"		"			"
"	"	76	"	"			"	"	"	"	"			"	"	"	2B		"		"			"
"	"	77	"	"			"	"	"	"	"			"	"	"	3A		"		"			"
"	"	78	"	"			"	"	"	"	"			"	"	"	3B		"		"			"
"	"	79	"	"			"	"	"	"	"			"	"	"	4A		"		"			"
"	"	80	"	"			"	"	"	"	"			"	"	"	4B		"		"			"
I_{IH}	3010 11/	81	15.0V	15.0V			15.0V	15.0V	"	15.0V	15.0V			15.0V	15.0V	"	All inputs together		800					"
"	"	82	15.0V	GND			GND	GND	"	GND	GND			GND	GND	"	1A		100.0		100.0			"
"	"	83	GND	15.0V			GND	GND	"	"	"			"	"	"	1B		"		"			"
"	"	84	"	GND			15.0V	GND	"	"	"			"	"	"	2A		"		"			"
"	"	85	"	GND			GND	15.0V	"	"	"			"	"	"	2B		"		"			"
I_{IH}	3010	86	GND	GND			GND	GND	GND	15.0V	GND			GND	GND	15.0V	3A		"		"			"
"	11/	87	"	"			"	"	"	GND	15.0V			GND	"	"	3B		"		"			"
"	"	88	"	"			"	"	"	GND	GND			15.0V	"	"	4A		"		"			"
"	"	89	"	"			"	"	"	GND	GND			GND	15.0V	"	4B		"		"			"

See notes at end of device type 04.

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

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 4 T_A = 25°C						
		Test No.	1A	1B	1Y	2Y	2A	2B	V_{SS}	3A	3B	3Y	4Y	4A	4B	V_{DD}		Min	Max					
C_i	3012	90	12/						GND							GND	1A		12					pF
"	"	91		12/					"							"	1B		"					"
"	"	92					12/		"							"	2A		"					"
"	"	93						12/	"							"	2B		"					"
"	"	94							"	12/						"	3A		"					"
"	"	95							"		12/					"	3B		"					"
"	"	96							"					12/		"	4A		"					"
"	"	97							"						12/	"	4B		"					"
																		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
t_{PHL}	3003	98	13/	GND	14/		GND	GND	GND	GND	GND			GND	GND	5.0V	1A to 1Y	13	210	18	315	13	210	ns
"	Fig. 3	99	GND	13/	14/		GND	GND	"	"	"			"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	100	"	GND		14/	13/	GND	"	"	"			"	"	"	2A to 2Y	"	"	"	"	"	"	"
"	"	101	"	"		14/	GND	13/	"	"	"			"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	102	"	"			"	GND	"	13/	"	14/		"	"	"	3A to 3Y	"	"	"	"	"	"	"
"	"	103	"	"			"	"	"	GND	13/	14/		"	"	"	3B to 3Y	"	"	"	"	"	"	"
"	"	104	"	"			"	"	"	"	GND		14/	13/	"	"	4A to 4Y	"	"	"	"	"	"	"
"	"	105	"	"			"	"	"	"	"		14/	GND	13/	"	4B to 4Y	"	"	"	"	"	"	"
t_{PLH}	"	106	13/	"	14/		"	"	"	"	"			"	GND	"	1A to 1Y	"	"	"	"	"	"	"
"	"	107	GND	13/	14/		"	"	"	"	"			"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	108	"	GND		14/	13/	"	"	"	"			"	"	"	2A to 2Y	"	"	"	"	"	"	"
"	"	109	"	"		14/	GND	13/	"	"	"			"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	110	"	"			"	GND	"	13/	"	14/		"	"	"	3A to 3Y	"	"	"	"	"	"	"
"	"	111	"	"			"	"	"	GND	13/	14/		"	"	"	3B to 3Y	"	"	"	"	"	"	"
"	"	112	"	"			"	"	"	"	GND		14/	13/	"	"	4A to 4Y	"	"	"	"	"	"	"
"	"	113	"	"			"	"	"	"	"		14/	GND	13/	"	4B to 4Y	"	"	"	"	"	"	"
t_{THL}	3004	114	13/	GND	14/		GND	GND	GND	GND	GND			GND	GND	5.0V	1Y	10	300	14	450	10	300	ns
"	Fig. 3	115	GND	13/	14/		GND	GND	"	"	"			"	"	"	1Y	"	"	"	"	"	"	"
"	"	116	"	GND		14/	13/	GND	"	"	"			"	"	"	2Y	"	"	"	"	"	"	"
"	"	117	"	"		14/	GND	13/	"	"	"			"	"	"	2Y	"	"	"	"	"	"	"
"	"	118	"	"			"	GND	"	13/	"	14/		"	"	"	3Y	"	"	"	"	"	"	"
"	"	119	"	"			"	"	"	GND	13/	14/		"	"	"	3Y	"	"	"	"	"	"	"
"	"	120	"	"			"	"	"	"	GND		14/	13/	"	"	4Y	"	"	"	"	"	"	"
"	"	121	"	"			"	"	"	"	"		14/	GND	13/	"	4Y	"	"	"	"	"	"	"
t_{TLH}	"	122	13/	"	14/		"	"	"	"	"			"	GND	"	1Y	10	410	14	615	10	410	"
"	"	123	GND	13/	14/		"	"	"	"	"			"	"	"	1Y	"	"	"	"	"	"	"
"	"	124	"	GND		14/	13/	"	"	"	"			"	"	"	2Y	"	"	"	"	"	"	"
"	"	125	"	"		14/	GND	13/	"	"	"			"	"	"	2Y	"	"	"	"	"	"	"
"	"	126	"	"			"	GND	"	13/	"	14/		"	"	"	3Y	"	"	"	"	"	"	"
"	"	127	"	"			"	"	"	GND	13/	14/		"	"	"	3Y	"	"	"	"	"	"	"
"	"	128	"	"			"	"	"	GND	GND		14/	13/	"	"	4Y	"	"	"	"	"	"	"
"	"	129	"	"			"	"	"	GND	GND		14/	GND	13/	"	4Y	"	"	"	"	"	"	"

See notes at end of device type 04.

TABLE III. Group A inspection for device type 03.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Test No.	1Y	1A	1B	1C	1D	NC	V_{SS}	NC	2A	2B	2C	2D	2Y	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IC}		1		1mA												GND	1A		1.5					Vdc
(pos)		2			1mA											"	1B		"					"
"		3				1mA										"	1C		"					"
"		4					1mA									"	1D		"					"
"		5									1mA					"	2A		"					"
"		6										1mA				"	2B		"					"
"		7											1mA			"	2C		"					"
"		8												1mA		"	2D		"					"
V_{IC}		9		-1mA					GND								1A		-6					"
(neg)		10			-1mA				"								1B		"					"
"		11				-1mA			"								1C		"					"
"		12					-1mA		"								1D		"					"
"		13							"		-1mA						2A		"					"
"		14							"			-1mA					2B		"					"
"		15							"				-1mA				2C		"					"
"		16							"					-1mA			2D		"					"
I_{SS}	3005	17		GND	GND	GND	GND		"		GND	GND	GND	GND		15.0V	V_{SS}		-25		-750			nA
"	2/	18		"	GND	GND	15.0V		"		15.0V	GND	GND	"		"	"		"		"			"
"	"	19		"	GND	15.0V	GND		"		GND	15.0V	GND	"		"	"		"		"			"
"	"	20		"	15.0V	GND	GND		"		GND	GND	15.0V	"		"	"		"		"			"
"	"	21		15.0V	GND	GND	GND		"		GND	GND	GND	15.0V		"	"		"		"			"
V_{OH1}	3006	22	4/	3/	3/	3/	3/		"		4.5V	4.5V	4.5V	4.5V		4.5V	1Y	2.5		2.5		2.5		Vdc
"	"	23		4.5V	4.5V	4.5V	4.5V		"		3/	3/	3/	3/	4/	4.5V	2Y	2.5		2.5		2.5		"
V_{OH2}	"	24	5/	3/	3/	3/	3/		"		5.0V	5.0V	5.0V	5.0V		5.0V	1Y	4.2		4.2		4.2		"
"	"	25		5.0V	5.0V	5.0V	5.0V		"		3/	3/	3/	3/	5/	"	2Y	4.2		4.2		4.2		"
V_{OH3}	"	26		3/	3/	3/	3/		"		5.0V	5.0V	5.0V	5.0V		"	1Y	4.95		4.95		4.95		"
"	"	27		5.0V	5.0V	5.0V	5.0V		"		3/	3/	3/	3/		"	2Y	4.95		4.95		4.95		"
V_{OH4}	"	26		6/	6/	6/	6/		"		12.5V	12.5V	12.5V	12.5V		12.5V	1Y	11.25		11.25		11.25		"
"	"	27		12.5V	12.5V	12.5V	12.5V		"		6/	6/	6/	6/		12.5V	2Y	11.25		11.25		11.25		"
V_{OL1}	3007	30	8/	7/	GND	GND	GND		"		GND	GND	GND	GND		5.5V	1Y		0.40		0.5		0.40	Vdc
"	"	31	"	GND	7/	GND	GND		"		"	"	"	"		"	1Y		"		"		"	"
"	"	32	"	"	GND	7/	GND		"		"	"	"	"		"	1Y		"		"		"	"
"	"	33	"	"	"	GND	7/		"		"	"	"	"		"	1Y		"		"		"	"
"	"	34		"	"	"	GND		"		7/	"	"	"	8/	"	2Y		"		"		"	"
"	"	35		"	"	"	"		"		GND	7/	"	"	"	"	2Y		"		"		"	"
"	"	36		"	"	"	"		"		"	GND	7/	"	"	"	2Y		"		"		"	"
"	"	37		"	"	"	"		"		"	"	GND	7/	"	"	2Y		"		"		"	"
V_{OL2}	"	38	15/	7/	"	"	"		"		"	"	"	GND		5.0V	1Y		0.7		0.7		0.7	"
"	"	39	"	GND	7/	"	"		"		"	"	"	"		"	1Y		"		"		"	"
"	"	40	"	"	GND	7/	"		"		"	"	"	"		"	1Y		"		"		"	"
"	"	41	"	"	"	GND	7/		"		"	"	"	"		"	1Y		"		"		"	"
"	"	42		"	"	"	GND		"		7/	"	"	"	15/	"	2Y		"		"		"	"
"	"	43		"	"	"	"		"		GND	7/	"	"	"	"	2Y		"		"		"	"
"	"	44		"	"	"	"		"		"	GND	7/	"	"	"	2Y		"		"		"	"
"	"	45		"	"	"	"		"		"	"	GND	7/	"	"	2Y		"		"		"	"
V_{OL3}	"	46		7/	"	"	"		"		"	"	"	GND		"	1Y		50		50		50	mV
"	"	47		GND	7/	"	"		"		"	"	"	"		"	1Y		"		"		"	"
"	"	48		"	GND	7/	"		"		"	"	"	"		"	1Y		"		"		"	"
"	"	49		"	"	GND	7/		"		"	"	"	"		"	1Y		"		"		"	"
"	"	50		"	"	"	GND		"		7/	"	"	"		"	2Y		"		"		"	"
"	"	51		"	"	"	"		"		GND	7/	"	"		"	2Y		"		"		"	"
"	"	52		"	"	"	"		"		"	GND	7/	"		"	2Y		"		"		"	"
"	"	53		"	"	"	"		"		"	"	GND	7/		"	2Y		"		"		"	"

See notes at end of device type 04.

TABLE III. Group A inspection for device type 03 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/															Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	1Y	1A	1B	1C	1D	NC	V_{SS}	NC	2A	2B	2C	2D	2Y	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{OL4}	3007	54		9/	GND	GND	GND		GND		GND	GND	GND	GND		12.5V	1Y		1.25		1.25		1.25	Vdc
"	"	55		GND	9/	"	"		"		"	"	"	"		"	1Y		"		"		"	"
"	"	56		"	GND	9/	"		"		"	"	"	"		"	1Y		"		"		"	"
"	"	57		"	"	GND	9/		"		"	"	"	"		"	1Y		"		"		"	"
"	"	58		"	"	"	GND		"		9/	"	"	"		"	2Y		"		"		"	"
"	"	59		"	"	"	"		"		GND	9/	"	"		"	2Y		"		"		"	"
"	"	60		"	"	"	"		"		GND	GND	9/	"		"	2Y		"		"		"	"
"	"	61		"	"	"	"		"		GND	GND	GND	9/		"	2Y		"		"		"	"
V_{OL5}	3007	62	10/	7/	7/	7/	7/		GND		GND	GND	GND	GND		5.0V	1Y		0.40		0.5		0.40	Vdc
"	"	63		GND	GND	GND	GND		"		7/	7/	7/	7/	10/	5.0V	2Y		0.40		0.5		0.40	Vdc
I_{IL} 11/	3009	64		"	"	"	"		"		GND	GND	GND	GND		15.0V	All inputs together		-8.0					nA
"	"	65		"	"	"	"		"		"	"	"	"		"	1A		-1.0		-45			"
"	"	66		"	"	"	"		"		"	"	"	"		"	1B		"		"			"
"	"	67		"	"	"	"		"		"	"	"	"		"	1C		"		"			"
"	"	68		"	"	"	"		"		"	"	"	"		"	1D		"		"			"
"	"	69		"	"	"	"		"		"	"	"	"		"	2A		"		"			"
"	"	70		"	"	"	"		"		"	"	"	"		"	2B		"		"			"
"	"	71		"	"	"	"		"		"	"	"	"		"	2C		"		"			"
"	"	72		"	"	"	"		"		"	"	"	"		"	2D		"		"			"
I_{IH} 11/	3010	73		15.0V	15.0V	15.0V	15.0V		"		15.0V	15.0V	15.0V	15.0V		15.0V	All inputs together		8.0					nA
"	"	74		15.0V	GND	GND	GND		"		GND	GND	GND	GND		"	1A		1.0		45			"
"	"	75		GND	15.0V	GND	GND		"		GND	"	"	"		"	1B		"		"			"
"	"	76		"	GND	15.0V	GND		"		GND	"	"	"		"	1C		"		"			"
"	"	77		"	"	GND	15.0V		"		GND	"	"	'		"	1D		"		"			"
"	"	78		"	"	"	GND		"		15.0V	"	"	"		"	2A		"		"			"
"	"	79		"	"	"	"		"		GND	15.0V	"	"		"	2B		"		"			"
"	"	80		"	"	"	"		"		GND	GND	15.0V	"		"	2C		"		"			"
"	"	81		"	"	"	"		"		GND	GND	GND	15.0V		"	2D		"		"			"
																		Subgroup 4 T_A = 25°C						
C_i	3012	82		12/					GND							GND	1A		12					pF
"	"	83			12/				"							"	1B		"					"
"	"	84				12/			"							"	1C		"					"
"	"	85					12/		"							"	1D		"					"
"	"	86							"		12/					"	2A		"					"
"	"	87							"			12/				"	2B		"					"
"	"	88							"				12/			"	2C		"					"
"	"	89							"					12/		"	2D		"					"

See notes at end of device type 04.

TABLE III. Group A inspection for device type 03 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Test No.	1Y	1A	1B	1C	1D	NC	V_{SS}	NC	2A	2B	2C	2D	2Y	V_{DD}		Min	Max	Min	Max	Min	Max	
t_{PHL}	3003	90	14/	13/	GND	GND	GND		GND		GND	GND	GND	GND		5.0V	1A to 1Y	10	210	14	315	10	210	ns
"	Fig. 5	91	"	GND	13/	GND	GND		"		"	"	"	"		"	1B to 1Y	"	"	"	"	"	"	"
"	"	92	"	"	GND	13/	GND		"		"	"	"	"		"	1C to 1Y	"	"	"	"	"	"	"
"	"	93	"	"	"	GND	13/		"		"	"	"	"		"	1D to 1Y	"	"	"	"	"	"	"
"	"	94		"	"	"	GND		"		13/	"	"	"	14/	"	2A to 2Y	"	"	"	"	"	"	"
"	"	95		"	"	"	"		"		GND	13/	"	"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	96		"	"	"	"		"		"	GND	13/	"	"	"	2C to 2Y	"	"	"	"	"	"	"
"	"	97		"	"	"	"		"		"	"	GND	13/	"	"	2D to 2Y	"	"	"	"	"	"	"
t_{PLH}	"	98	14/	13/	"	"	"		"		"	"	"	GND		"	1A to 1Y	"	"	"	"	"	"	"
"	"	99	"	GND	13/	"	"		"		"	"	"	"		"	1B to 1Y	"	"	"	"	"	"	"
"	"	100	"	"	GND	13/	"		"		"	"	"	"		"	1C to 1Y	"	"	"	"	"	"	"
"	"	101	"	"	"	GND	13/		"		"	"	"	"		"	1D to 1Y	"	"	"	"	"	"	"
"	"	102		"	"	"	GND		"		13/	"	"	"	14/	"	2A to 2Y	"	"	"	"	"	"	"
"	"	103		"	"	"	"		"		GND	13/	"	"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	104		"	"	"	"		"		"	GND	13/	"	"	"	2C to 2Y	"	"	"	"	"	"	"
"	"	105		"	"	"	"		"		"	"	GND	13/	"	"	2D to 2Y	"	"	"	"	"	"	"
t_{THL}	3004	106	14/	13/	"	"	"		"		"	"	"	GND		"	1Y	10	300	14	450	10	300	"
"	Fig. 5	107	"	GND	13/	"	"		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	108	"	"	GND	13/	"		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	109	"	"	"	GND	13/		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	110		"	"	"	GND		"		13/	"	"	"	14/	"	2Y	"	"	"	"	"	"	"
"	"	111		"	"	"	"		"		GND	13/	"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	112		"	"	"	"		"		"	GND	13/	"	"	"	2Y	"	"	"	"	"	"	"
"	"	113		"	"	"	"		"		"	"	GND	13/	"	"	2Y	"	"	"	"	"	"	"
t_{TLH}	"	114	14/	13/	"	"	"		"		"	"	"	GND		"	1Y	10	410	14	615	10	410	"
"	"	115	"	GND	13/	"	"		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	116	"	"	GND	13/	"		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	117	"	"	"	GND	13/		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	118		"	"	"	GND		"		13/	"	"	"	14/	"	2Y	"	"	"	"	"	"	"
"	"	119		"	"	"	"		"		GND	13/	"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	120		"	"	"	"		"		GND	GND	13/	"	"	"	2Y	"	"	"	"	"	"	"
"	"	121		"	"	"	"		"		GND	GND	GND	13/	"	"	2Y	"	"	"	"	"	"	"

See notes at end of device type 04.

TABLE III. Group A inspection for device type 04.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	1A	1B	2A	2B	2C	2Y	V_{SS}	1C	1Y	3Y	3A	3B	3C	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IC}		1	1mA													GND	1A		1.5					Vdc
(pos)		2		1mA												"	1B		"					"
"		3								1mA						"	1C		"					"
"		4			1mA											"	2A		"					"
"		5				1mA										"	2B		"					"
"		6					1mA									"	2C		"					"
"		7											1mA			"	3A		"					"
"		8												1mA		"	3B		"					"
"		9													1mA	"	3C		"					"
V_{IC}		10	-1mA						GND								1A		-6					"
(neg)		11		-1mA					"								1B		"					"
"		12							"	-1mA							1C		"					"
"		13			-1mA				"								2A		"					"
"		14				-1mA			"								2B		"					"
"		15					-1mA		"								2C		"					"
"		16							"				-1mA				3A		"					"
"		17							"					-1mA			3B		"					"
"		18							"						-1mA		3C		"					"
I_{SS}	3005 2/	19	15.0V	GND	15.0V	GND	GND		"	GND			15.0V	GND	GND	15.0V	V_{SS}		-25.0		-750			nA
"	"	20	GND	15.0V	GND	15.0V	GND		"	GND			GND	15.0V	GND	"	"		"		"			"
"	"	21	GND	GND	GND	GND	15.0V		"	15.0V			GND	GND	15.0V	"	"		"		"			"
"	"	22	GND	GND	GND	GND	GND		"	GND			GND	GND	GND	"	"		"		"			"
V_{OH1}	3006	23	3/	3/	4.5V	4.5V	4.5V		"	3/	4/		4.5V	4.5V	4.5V	4.5V	1Y	2.5		2.5		2.5		Vdc
"	"	24	4.5V	4.5V	3/	3/	3/	4/	"	4.5V			4.5V	4.5V	4.5V	4.5V	2Y	2.5		2.5		2.5		"
"	"	25	4.5V	4.5V	4.5V	4.5V	4.5V		"	4.5V		4/	3/	3/	3/	4.5V	3Y	2.5		2.5		2.5		"
V_{OH2}	"	26	3/	3/	5.0V	5.0V	5.0V		"	3/	5/		5.0V	5.0V	5.0V	5.0V	1Y	4.2		4.2		4.2		"
"	"	27	5.0V	5.0V	3/	3/	3/	5/	"	5.0V			5.0V	5.0V	5.0V	"	2Y	4.2		4.2		4.2		"
"	"	28	5.0V	5.0V	5.0V	5.0V	5.0V		"	5.0V		5/	3/	3/	3/	"	3Y	4.2		4.2		4.2		"
V_{OH3}	"	29	3/	3/	5.0V	5.0V	5.0V		"	3/			5.0V	5.0V	5.0V	"	1Y	4.95		4.95		4.95		"
"	"	30	5.0V	5.0V	3/	3/	3/		"	5.0V			5.0V	5.0V	5.0V	"	2Y	4.95		4.95		4.95		"
"	"	31	5.0V	5.0V	5.0V	5.0V	5.0V		"	5.0V			3/	3/	3/	"	3Y	4.95		4.95		4.95		"
V_{OH4}	3006	32	6/	6/	12.5V	12.5V	12.5V		"	6/			12.5V	12.5V	12.5V	12.5V	1Y	11.25		11.25		11.25		Vdc
"	"	33	12.5V	12.5V	6/	6/	6/		"	12.5V			12.5V	12.5V	12.5V	12.5V	2Y	11.25		11.25		11.25		"
"	"	34	12.5V	12.5V	12.5V	12.5V	12.5V		"	12.5V			6/	6/	6/	12.5V	3Y	11.25		11.25		11.25		"
V_{OL1}	3007	35	7/	GND	GND	GND	GND		"	GND	8/		GND	GND	GND	5.5V	1Y		0.40		0.5		0.40	"
"	"	36	GND	7/	GND	"	"		"	GND	8/		"	"	"	"	1Y		"		"		"	"
"	"	37	"	GND	GND	"	"		"	7/	8/		"	"	"	"	1Y		"		"		"	"
"	"	38	"	"	7/	"	"	8/	"	GND			"	"	"	"	2Y		"		"		"	"
"	"	39	"	"	GND	7/	"	8/	"	"			"	"	"	"	2Y		"		"		"	"
"	"	40	"	"	"	GND	7/	8/	"	"			"	"	"	"	2Y		"		"		"	"
"	"	41	"	"	"	"	GND		"	"		8/	7/	"	"	"	3Y		"		"		"	"
"	"	42	"	"	"	"	"		"	"		8/	GND	7/	"	"	3Y		"		"		"	"
"	"	43	"	"	"	"	"		"	"		8/	GND	GND	7/	"	3Y		"		"		"	"
V_{OL2}	"	44	7/	GND	"	"	"		"	"	15/		"	"	GND	5.0V	1Y		0.7		0.7		0.7	"
"	"	45	GND	7/	"	"	"		"	"	15/		"	"	"	"	1Y		"		"		"	"
"	"	46	"	GND	"	"	"		"	7/	15/		"	"	"	"	1Y		"		"		"	"
"	"	47	"	"	7/	"	"	15/	"	GND			"	"	"	"	2Y		"		"		"	"
"	"	48	"	"	GND	7/	"	15/	"	"			"	"	"	"	2Y		"		"		"	"
"	"	49	"	"	"	GND	7/	15/	"	"			"	"	"	"	2Y		"		"		"	"
"	"	50	"	"	"	"	GND		"	"		15/	7/	"	"	"	3Y		"		"		"	"
"	"	51	"	"	"	"	"		"	"		15/	GND	7/	"	"	3Y		"		"		"	"
"	"	52	"	"	"	"	"		"	"		15/	"	GND	7/	"	3Y		"		"		"	"

See notes at end of device type 04.

TABLE III. Group A inspection for device type 04 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/															Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	1A	1B	2A	2B	2C	2Y	V_{SS}	1C	1Y	3Y	3A	3B	3C	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{OL3}	3007	53	7/	GND	GND	GND	GND		GND	GND			GND	GND	GND	5.0 V	1Y		50		50		50	mV
"	"	54	GND	7/	"	"	"		"	"			"	"	"	"	1Y		"		"		"	"
"	"	55	"	GND	"	"	"		"	7/			"	"	"	"	1Y		"		"		"	"
"	"	56	"	"	7/	"	"		"	GND			"	"	"	"	2Y		"		"		"	"
"	"	57	"	"	GND	7/	"		"	"			"	"	"	"	2Y		"		"		"	"
"	"	58	"	"	"	GND	7/		"	"			"	"	"	"	2Y		"		"		"	"
"	"	59	"	"	"	"	GND		"	"			7/	"	"	"	3Y		"		"		"	"
"	"	60	"	"	"	"	"		"	"			GND	7/	"	"	3Y		"		"		"	"
"	"	61	"	"	"	"	"		"	"			GND	GND	7/	"	3Y		"		"		"	"
V_{OL4}	3007	62	9/	GND	GND	GND	GND		"	GND			GND	GND	GND	12.5V	1Y		1.25		1.25		1.25	Vdc
"	"	63	GND	9/	"	"	"		"	"			"	"	"	"	1Y		"		"		"	"
"	"	64	"	GND	"	"	"		"	9/			"	"	"	"	1Y		"		"		"	"
"	"	65	"	"	9/	"	"		"	GND			"	"	"	"	2Y		"		"		"	"
"	"	66	"	"	GND	9/	"		"	"			"	"	"	"	2Y		"		"		"	"
"	"	67	"	"	"	GND	9/		"	"			"	"	"	"	2Y		"		"		"	"
"	"	68	"	"	"	"	GND		"	"			9/	"	"	"	3Y		"		"		"	"
"	"	69	"	"	"	"	"		"	"			GND	9/	"	"	3Y		"		"		"	"
"	"	70	"	"	"	"	"		"	"			"	GND	9/	"	3Y		"		"		"	"
V_{OL5}	"	71	7/	7/	GND	GND	GND		"	7/	10/		"	GND	GND	5.0V	1Y		0.4		0.5		0.4	"
"	"	72	GND	GND	7/	7/	7/	10/	"	GND			"	GND	GND	"	2Y		"		"		"	"
"	"	73	GND	GND	GND	GND	GND		"	GND		10/	7/	7/	7/	"	3Y		"		"		"	"
I_{IL} 11/	3009	74	"	"	"	"	"		"	"			GND	GND	GND	15.0V	All inputs together		-900					nA
"	"	75	"	"	"	"	"		"	"			"	"	"	"	1A		-100		-100			"
"	"	76	"	"	"	"	"		"	"			"	"	"	"	1B		"		"			"
"	"	77	"	"	"	"	"		"	"			"	"	"	"	1C		"		"			"
"	"	78	"	"	"	"	"		"	"			"	"	"	"	2A		"		"			"
"	"	79	"	"	"	"	"		"	"			"	"	"	"	2B		"		"			"
"	"	80	"	"	"	"	"		"	"			"	"	"	"	2C		"		"			"
"	"	81	"	"	"	"	"		"	"			"	"	"	"	3A		"		"			"
"	"	82	"	"	"	"	"		"	"			"	"	"	"	3B		"		"			"
"	"	83	"	"	"	"	"		"	"			"	"	"	"	3C		"		"			"
I_{IH} 11/	3010	84	15.0V	15.0V	15.0V	15.0V	15.0V		"	15.0V			15.0V	15.0V	15.0V	15.0V	All inputs together		900					nA
"	"	85	15.0V	GND	GND	GND	GND		"	GND			GND	GND	GND	"	1A		100		100			"
"	"	86	GND	15.0V	GND	"	"		"	GND			"	"	"	"	1B		"		"			"
"	"	87	"	GND	GND	"	"		"	15.0V			"	"	"	"	1C		"		"			"
"	"	88	"	"	15.0V	"	"		"	GND			"	"	"	"	2A		"		"			"
"	"	89	"	"	GND	15.0V	"		"	"			"	"	"	"	2B		"		"			"
"	"	90	"	"	"	GND	15.0V		"	"			"	"	"	"	2C		"		"			"
"	"	91	"	"	"	"	GND		"	"			15.0V	"	"	"	3A		"		"			"
"	"	92	"	"	"	"	GND		"	"			GND	15.0V	"	"	3B		"		"			"
"	"	93	"	"	"	"	GND		"	"			GND	GND	15.0V	"	3C		"		"			"

See notes at end of device type 04.

TABLE III. Group A inspection for device type 04 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 4 T_A = 25°C						
		Test No.	1A	1B	2A	2B	2C	2Y	V_{SS}	1C	1Y	3Y	3A	3B	3C	V_{DD}		Min	Max					
C_I	3012	94	12/						GND							GND	1A		12					pF
"	"	95		12/					"							"	1B		"					"
"	"	96							"	12/						"	1C		"					"
"	"	97			12/				"							"	2A		"					"
"	"	98				12/			"							"	2B		"					"
"	"	99					12/		"							"	2C		"					"
"	"	100							"				12/			"	3A		"					"
"	"	101							"					12/		"	3B		"					"
"	"	102							"						12/	"	3C		"					"
																		Test limits						Units
																		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
																		Min	Max	Min	Max	Min	Max	
t_{PHL}	3003	103	13/	GND	GND	GND	GND		GND	GND	14/		GND	GND	GND	5.0V	1A to 1Y	10	210	14	315	10	210	ns
"	Fig. 3	104	GND	13/	"	"	"		"	GND	14/		"	"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	105	"	GND	"	"	"		"	13/	14/		"	"	"	"	1C to 1Y	"	"	"	"	"	"	"
"	"	106	"	"	13/	"	"	14/	"	GND			"	"	"	"	2A to 2Y	"	"	"	"	"	"	"
"	"	107	"	"	GND	13/	"	14/	"	"			"	"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	108	"	"	"	GND	13/	14/	"	"			"	"	"	"	2C to 2Y	"	"	"	"	"	"	"
"	"	109	"	"	"	"	GND		"	"		14/	13/	"	"	"	3A to 3Y	"	"	"	"	"	"	"
"	"	110	"	"	"	"	"		"	"		14/	GND	13/	"	"	3B to 3Y	"	"	"	"	"	"	"
"	"	111	"	"	"	"	"		"	"		14/	"	GND	13/	"	3C to 3Y	"	"	"	"	"	"	"
t_{PLH}	3003	112	13/	"	"	"	"		"	"	14/		"	"	GND	"	1A to 1Y	"	"	"	"	"	"	"
"	Fig. 3	113	GND	13/	"	"	"		"	"	14/		"	"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	114	"	GND	"	"	"		"	13/	14/		"	"	"	"	1C to 1Y	"	"	"	"	"	"	"
"	"	115	"	"	13/	"	"	14/	"	GND			"	"	"	"	2A to 2Y	"	"	"	"	"	"	"
"	"	116	"	"	GND	13/	"	14/	"	"			"	"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	117	"	"	"	GND	13/	14/	"	"			"	"	"	"	2C to 2Y	"	"	"	"	"	"	"
"	"	118	"	"	"	"	GND		"	"		14/	13/	"	"	"	3A to 3Y	"	"	"	"	"	"	"
"	"	119	"	"	"	"	GND		"	"		14/	GND	13/	"	"	3B to 3Y	"	"	"	"	"	"	"
"	"	120	"	"	"	"	GND		"	"		14/	GND	GND	13/	"	3C to 3Y	"	"	"	"	"	"	"

See notes at end of device type 04.

TABLE III. Group A inspection for device type 04 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Test No.	1A	1B	2A	2B	2C	2Y	V_{SS}	1C	1Y	3Y	3A	3B	3C	V_{DD}		Min	Max	Min	Max	Min	Max	
t_{THL}	3004	121	13/	GND	GND	GND	GND		GND	GND	14/		GND	GND	GND	5.0V	1Y	10	300	14	450	10	300	ns
"	Fig. 3	122	GND	13/	"	"	"		"	GND	14/		"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	123	"	GND	"	"	"		"	13/	14/		"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	124	"	"	13/	"	"	14/	"	GND			"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	125	"	"	GND	13/	"	14/	"	"			"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	126	"	"	"	GND	13/	14/	"	"			"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	127	"	"	"	"	GND		"	"		14/	13/	"	"	"	3Y	"	"	"	"	"	"	"
"	"	128	"	"	"	"	"		"	"		14/	GND	13/	"	"	3Y	"	"	"	"	"	"	"
"	"	129	"	"	"	"	"		"	"		14/	"	GND	13/	"	3Y	"	"	"	"	"	"	"
t_{TLH}	"	130	13/	"	"	"	"		"	GND	14/		"	"	GND	"	1Y	10	410	14	615	10	410	"
"	"	131	GND	13/	"	"	"		"	GND	14/		"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	132	"	GND	"	"	"		"	13/	14/		"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	133	"	"	13/	"	"	14/	"	GND			"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	134	"	"	GND	13/	"	14/	"	"			"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	135	"	"	"	GND	13/	14/	"	"			"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	136	"	"	"	"	GND		"	"		14/	13/	"	"	"	3Y	"	"	"	"	"	"	"
"	"	137	"	"	"	"	GND		"	"		14/	GND	13/	"	"	3Y	"	"	"	"	"	"	"
"	"	138	"	"	"	"	GND		"	"		14/	GND	GND	13/	"	3Y	"	"	"	"	"	"	"

1/ Input pins not designated may be tied to V_{CC} or GND or may be left open provided they do not influence the outcome of the measurement. Output pins not designated may be tied to the loads or may be left open provided they do not influence the outcome of the measurement, except as follows: V_{IC}(pos) tests, the V_{SS} terminals shall be open. V_{IC}(neg) tests, the V_{DD} terminal shall be open. I_{SS} tests, the output terminals shall be open.

2/ When performing quiescent supply current measurements (I_{SS}), the meter shall be placed so that all currents flow thru the meter.

3/ V_{IL} = 1.0 V at 25°C, 0.85 V at 125°C, 1.35 V at -55°C. For device type 01, V_{IL} = 0.9 V at 25°C, 0.65 V at 125°C, and 0.95 V at -55°C.

4/ I_{OH} = -.10 mA at 25°C, -.10 mA at 125°C, -.10 mA at -55°C.

5/ I_{OH} = -.20 mA at 25°C, -.13 mA at 125°C, -.25 mA at -55°C.

6/ V_{IL} = 2.50 V at 25°C, 2.20 V at 125°C, 2.65 V at -55°C. For device type 01, V_{IL} = 2.25 V at 25°C, 1.95 V at 125°C and 2.40 V at -55°C.

7/ V_{IH} = 3.80 V at 25°C, 3.65 V at 125°C, 3.95 V at -55°C. For device type 01, V_{IH} = 3.95 V at 25°C, 3.85 V at 125°C, and 4.05 V at -55°C.

8/ I_{OL} = .23 mA at 25°C, .23 mA at 125°C, .23 mA at -55°C.

9/ V_{IH} = 9.50 V at 25°C, 9.25 V at 125°C, 9.75 V at -55°C. For device type 01, V_{IH} = 10.25 V at 25°C, 10.00 V at 125°C and 10.50 V at -55°C.

10/ I_{OL} = 0.8 mA at 25°C, 0.56 mA at 125°C, 1.0 mA at -55°C.

11/ The device manufacturer may, at his option, measure I_{IL} and I_{IH} at 25°C for each individual input or measure all inputs together.

12/ Capacitance bridge between measured terminal and V_{SS}: frequency = 1 MHz.

13/ Pulse conditions – See figure 3.

14/ Loading conditions – See figure 3.

15/ I_{OL} = .40 mA at 25°C, .28 mA at 125°C, .50 mA at -55°C.

TABLE III. Group A inspection for device type 51.

Symbol	MIL-STD-883 method	Cases A,C,D, T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No	NC	NC	1A	1B	1C	1Y	V_{SS}	3A	3Y	2Y	2A	2B	2C	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IC}		1			1mA											GND	1A		1.5					Vdc
(pos)		2				1mA										"	1B		"					"
"		3					1mA									"	1C		"					"
"		4								1mA						"	3A		"					"
"		5											1mA			"	2A		"					"
"		6												1mA		"	2B		"					"
"		7													1mA	"	2C		"					"
V_{IC}		8			-1mA				GND								1A		-6					"
(neg)		9				-1mA			"								1B		"					"
"		10					-1mA		"								1C		"					"
"		11							"	-1mA							3A		"					"
"		12							"				-1mA				2A		"					"
"		13							"					-1mA			2B		"					"
"		14							"						-1mA		2C		"					"
I_{SS}	3005	15			18V	GND	GND		"	18V			18V	GND	GND	18V	V_{SS}		-25		-750			nA
2/	"	16			GND	18V	GND		"	18V			GND	18V	GND	"	V_{SS}		"		"			"
"	"	17			GND	GND	18V		"	18V			GND	GND	18V	"	V_{SS}		"		"			"
"	"	18			GND	GND	GND		"	GND			GND	GND	GND	"	V_{SS}		"		"			"
V_{OH5}	3006	19			GND	GND	GND		"	15V			15V	15V	15V	15V	1Y	14.95		14.95		14.95		Vdc
V_{OH5}	3006	20			15V	15V	15V		"	15V			GND	GND	GND	"	2Y	"		"		"		"
V_{OH5}	3006	21			15V	15V	15V		"	GND			15V	15V	15V	"	3Y	"		"		"		"
V_{OL6}	3007	22			15V	GND	GND		"	"			GND	GND	GND	"	1Y		0.05		0.05		0.05	"
"	"	23			GND	15V	GND		"	"			GND	"	"	"	1Y		"		"		"	"
"	"	24			"	GND	15V		"	"			GND	"	"	"	1Y		"		"		"	"
"	"	25			"	"	GND		"	"			15V	"	"	"	2Y		"		"		"	"
"	"	26			"	"	"		"	"			GND	15V	"	"	2Y		"		"		"	"
"	"	27			"	"	"		"	"			"	GND	15V	"	2Y		"		"		"	"
"	"	28			"	"	"		"	15V			"	GND	GND	"	3Y		"		"		"	"
V_{IH1}		29			3.5V	1.5V	1.5V		"	GND			GND	GND	GND	5V	1Y		0.5		0.5		0.5	"
"		30			1.5V	3.5V	1.5V		"	"			"	"	"	"	1Y		"		"		"	"
"		31			1.5V	1.5V	3.5V		"	"			"	"	"	"	1Y		"		"		"	"
"		32			GND	GND	GND		"	"			3.5V	1.5V	1.5V	"	2Y		"		"		"	"
"		33			"	"	"		"	"			1.5V	3.5V	1.5V	"	2Y		"		"		"	"
"		34			"	"	"		"	"			1.5V	1.5V	3.5V	"	2Y		"		"		"	"
"		35			"	"	"		"	3.5V			GND	GND	GND	"	3Y		"		"		"	"
V_{IH2}		36			7.0V	3.0V	3.0V		"	GND			"	"	"	10V	1Y		1.0		1.0		1.0	"
"		37			3.0V	7.0V	3.0V		"	"			"	"	"	"	1Y		"		"		"	"
"		38			3.0V	3.0V	7.0V		"	"			"	"	"	"	1Y		"		"		"	"
"		39			GND	GND	GND		"	"			7.0V	3.0V	3.0V	"	2Y		"		"		"	"
"		40			"	"	"		"	"			3.0V	7.0V	3.0V	"	2Y		"		"		"	"
"		41			"	"	"		"	"			3.0V	3.0V	7.0V	"	2Y		"		"		"	"
"		42			"	"	"		"	7.0V			GND	GND	GND	"	3Y		"		"		"	"

See notes at end of device type 54.

TABLE III. Group A inspection for device type 51 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D, T,X,Y	TERMINAL CONDITIONS 1/															Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No	NC	NC	1A	1B	1C	1Y	V_{SS}	3A	3Y	2Y	2A	2B	2C	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IH3}		43			11V	4.0V	4.0V		GND	GND			GND	GND	GND	15V	1Y		1.5		1.5		1.5	Vdc
"		44			4.0V	11V	4.0V		"	"			"	"	"	"	1Y		"		"		"	"
"		45			4.0V	4.0V	11V		"	"			"	"	"	"	1Y		"		"		"	"
"		46			GND	GND	GND		"	"			11V	4.0V	4.0V	"	2Y		"		"		"	"
"		47			"	"	"		"	"			4.0V	11V	4.0V	"	2Y		"		"		"	"
"		48			"	"	"		"	"			4.0V	4.0V	11V	"	2Y		"		"		"	"
"		49			"	"	"		"	11V			GND	GND	GND	"	3Y		"		"		"	"
V_{IL1}		50			1.5V	1.5V	1.5V		"	5.0V			5.0V	5.0V	5.0V	5V	1Y	4.5		4.5		4.5		"
V_{IL1}		51			5.0V	5.0V	5.0V		"	5.0V			1.5V	1.5V	1.5V	5V	2Y	4.5		4.5		4.5		"
V_{IL1}		52			5.0V	5.0V	5.0V		"	1.5V			5.0V	5.0V	5.0V	5V	3Y	4.5		4.5		4.5		"
V_{IL2}		53			3.0V	3.0V	3.0V		"	10V			10V	10V	10V	10V	1Y	9.0		9.0		9.0		"
V_{IL2}		54			10V	10V	10V		"	10V			3.0V	3.0V	3.0V	10V	2Y	9.0		9.0		9.0		"
V_{IL2}		55			10V	10V	10V		"	3.0V			10V	10V	10V	10V	3Y	9.0		9.0		9.0		"
V_{IL3}		56			4.0V	4.0V	4.0V		"	15V			15V	15V	15V	15V	1Y	13.5		13.5		13.5		"
V_{IL3}		57			15V	15V	15V		"	15V			4.0V	4.0V	4.0V	15V	2Y	13.5		13.5		13.5		"
V_{IL3}		58			15V	15V	15V		"	4.0V			15V	15V	15V	15V	3Y	13.5		13.5		13.5		"
I_{OL1}		59			5V	GND	GND	0.4V	GND	GND			GND	GND	GND	5V	1Y	0.51		0.36		0.64		mA
"		60			GND	5V	GND	0.4V	"	"			GND	"	"	"	1Y	"		"		"		"
"		61			"	GND	5V	0.4V	"	"			GND	"	"	"	1Y	"		"		"		"
"		62			"	"	GND		"	"		0.4V	5V	"	"	"	2Y	"		"		"		"
"		63			"	"	"		"	"		0.4V	GND	5V	"	"	2Y	"		"		"		"
"		64			"	"	"		"	"		0.4V	"	GND	5V	"	2Y	"		"		"		"
"		65			"	"	"		"	5V	0.4V		"	"	GND	"	3Y	"		"		"		"
I_{OL2}		66			15V	"	"	1.5V	"	GND			"	"	"	15V	1Y	3.4		2.4		4.2		"
"		67			GND	15V	"	1.5V	"	"			"	"	"	"	1Y	"		"		"		"
"		68			"	GND	15V	1.5V	"	"			"	"	"	"	1Y	"		"		"		"
"		69			"	"	GND		"	"		1.5V	15V	"	"	"	2Y	"		"		"		"
"		70			"	"	"		"	"		1.5V	GND	15V	"	"	2Y	"		"		"		"
"		71			"	"	"		"	"		1.5V	GND	GND	15V	"	2Y	"		"		"		"
"		72			"	"	"		"	15V	1.5V		GND	GND	GND	"	3Y	"		"		"		"
I_{OH1}		73			"	"	"	4.6V	"	5V			5V	5V	5V	5V	1Y	-0.51		-0.36		-0.64		"
I_{OH1}		74			5V	5V	5V		"	5V		4.6V	GND	GND	GND	5V	2Y	-0.51		-0.36		-0.64		"
I_{OH1}		75			5V	5V	5V		"	GND	4.6V		5V	5V	5V	5V	3Y	-0.51		-0.36		-0.64		"
I_{OH2}		76			GND	GND	GND	13.5V	"	15V			15V	15V	15V	15V	1Y	-3.4		-2.4		-4.2		"
I_{OH2}		77			15V	15V	15V		"	15V		13.5V	GND	GND	GND	15V	2Y	-3.4		-2.4		-4.2		"
I_{OH2}		78			15V	15V	15V		"	GND	13.5V		15V	15V	15V	15V	3Y	-3.4		-2.4		-4.2		"
I_{IL} 3/	3009	79			GND	GND	GND		GND	GND			GND	GND	GND	18V	All inputs together		-7.0					nA
"	"	80			"	"	"		"	"			"	"	"	"	1A		-1.0		-45			"
"	"	81			"	"	"		"	"			"	"	"	"	1B		"		"			"
"	"	82			"	"	"		"	"			"	"	"	"	1C		"		"			"
"	"	83			"	"	"		"	"			"	"	"	"	2A		"		"			"
"	"	84			"	"	"		"	"			"	"	"	"	2B		"		"			"
"	"	85			"	"	"		"	"			"	"	"	"	2C		"		"			"
"	"	86			"	"	"		"	"			"	"	"	"	3A		"		"			"

See notes at end of device type 54.

TABLE III. Group A inspection for device type 51 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D, T,X,Y	TERMINAL CONDITIONS 1/															Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No	NC	NC	1A	1B	1C	1Y	V_{SS}	3A	3Y	2Y	2A	2B	2C	V_{DD}		Min	Max	Min	Max	Min	Max	
I_{IH} 3/	3010	87			18.0V	18.0V	18.0V		GND	18.0V			18.0V	18.0V	18.0V	18.0V	All inputs together		7.0					nA
"	"	88			18.0V	GND	GND		"	GND			GND	GND	GND	"	1A		1.0		45			"
"	"	89			GND	18.0V	GND		"	"			"	"	"	"	1B		"		"			"
"	"	90			"	GND	18.0V		"	"			"	"	"	"	1C		"		"			"
"	"	91			"	"	GND		"	"			18.0V	"	"	"	2A		"		"			"
"	"	92			"	"	"		"	"			GND	18.0V	"	"	2B		"		"			"
"	"	93			"	"	"		"	"			"	GND	18.0V	"	2C		"		"			"
"	"	94			"	"	"		"	18.0V			"	"	GND	"	3A		"		"			"
																		Subgroup 4 T_A = 25°C						
C_i	3012	95			4/				GND							GND	1A		12					pF
"	"	96				4/			"							"	1B		"					"
"	"	97					4/		"							"	1C		"					"
"	"	98							"				4/			"	2A		"					"
"	"	99							"					4/		"	2B		"					"
"	"	100							"						4/	"	2C		"					"
"	"	101							"	4/						"	3A		"					"
																		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
t_{PHL}	3003	102			5/	GND	GND	6/	GND	GND			GND	GND	GND	5.0V	1A to 1Y	10	210	14	315	10	210	ns
"	Fig. 3	103			GND	5/	GND	6/	"	"			GND	"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	104			"	GND	5/	6/	"	"			GND	"	"	"	1C to 1Y	"	"	"	"	"	"	"
"	"	105			"	"	GND		"	"		6/	5/	"	"	"	2A to 2Y	"	"	"	"	"	"	"
"	"	106			"	"	"		"	"		6/	GND	5/	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	107			"	"	"		"	"		6/	"	GND	5/	"	2C to 2Y	"	"	"	"	"	"	"
"	"	108			"	"	"		"	5/	6/		"	"	GND	"	3A to 3Y	"	"	"	"	"	"	"
t_{PLH}	3003	109			5/	GND	GND	6/	GND	GND			GND	GND	GND	5.0V	1A to 1Y	10	275	14	415	10	275	"
"	Fig. 3	110			GND	5/	GND	6/	"	"			"	"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	111			"	GND	5/	6/	"	"			"	"	"	"	1C to 1Y	"	"	"	"	"	"	"
"	"	112			"	"	GND		"	"		6/	5/	"	"	"	2A to 2Y	"	"	"	"	"	"	"
"	"	113			"	"	"		"	"		6/	GND	5/	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	114			"	"	"		"	"		6/	"	GND	5/	"	2C to 2Y	"	"	"	"	"	"	"
"	"	115			"	"	"		"	5/	6/		"	"	GND	"	3A to 3Y	"	"	"	"	"	"	"
t_{THL}	3004	116			5/	"	"	6/	"	GND			"	"	"	"	1Y	10	300	14	450	10	300	"
"	Fig. 3	117			GND	5/	"	6/	"	"			"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	118			"	GND	5/	6/	"	"			"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	119			"	"	GND		"	"		6/	5/	"	"	"	2Y	"	"	"	"	"	"	"
"	"	120			"	"	"		"	"		6/	GND	5/	"	"	2Y	"	"	"	"	"	"	"
"	"	121			"	"	"		"	"		6/	"	GND	5/	"	2Y	"	"	"	"	"	"	"
"	"	122			"	"	"		"	5/	6/		"	"	GND	"	3Y	"	"	"	"	"	"	"
t_{TLH}	"	123			5/	"	"	6/	"	GND			"	"	"	"	1Y	10	450	14	675	10	450	"
"	"	124			GND	5/	"	6/	"	"			"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	125			"	GND	5/	6/	"	"			"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	126			"	"	GND		"	"		6/	5/	"	"	"	2Y	"	"	"	"	"	"	"
"	"	127			"	"	"		"	"		6/	GND	5/	"	"	2Y	"	"	"	"	"	"	"
"	"	128			"	"	"		"	"		6/	"	GND	5/	"	2Y	"	"	"	"	"	"	"
"	"	129			"	"	"		"	5/	6/		"	GND	GND	"	3Y	"	"	"	"	"	"	"

See notes at end of device type 54.

TABLE III. Group A inspection for device type 52.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/															Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	1A	1B	1Y	2Y	2A	2B	V_{SS}	3A	3B	3Y	4Y	4A	4B	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IC}		1	1mA													GND	1A		1.5					Vdc
(pos)		2		1mA												"	1B		"					"
"		3					1mA									"	2A		"					"
"		4						1mA								"	2B		"					"
"		5								1mA						"	3A		"					"
"		6									1mA					"	3B		"					"
"		7												1mA		"	4A		"					"
"		8													1mA	"	4B		"					"
V_{IC}		9	-1mA						GND								1A		-6					"
(neg)		10		-1mA					"								1B		"					"
"		11					-1mA		"								2A		"					"
"		12						-1mA	"								2B		"					"
"		13							"	-1mA							3A		"					"
"		14							"		-1mA						3B		"					"
"		15							"					-1mA			4A		"					"
"		16							"						-1mA		4B		"					"
I_{SS}	3005	17	18V	GND			GND	18V	"	18V	GND			GND	18V	18V	V_{SS}		-25		-750			nA
2/	3005	18	GND	18V			18V	GND	"	GND	18V			18V	GND	18V	"		"		"			"
"	3005	19	"	GND			GND	GND	"	GND	GND			GND	GND	18V	"		"		"			"
V_{OH5}	3006	20	"	"			15V	15V	"	15V	15V			15V	15V	15V	1Y	14.95		14.95		14.95		Vdc
"	"	21	15V	15V			GND	GND	"	15V	15V			15V	15V	"	2Y	"		"		"		"
"	"	22	"	15V			15V	15V	"	GND	GND			15V	15V	"	3Y	"		"		"		"
"	"	23	"	15V			15V	15V	"	15V	15V			GND	GND	"	4Y	"		"		"		"
V_{OL6}	3007	24	"	GND			GND	GND	"	GND	GND			GND	GND	"	1Y		0.05		0.05		0.05	"
"	"	25	GND	15V			GND	GND	"	"	"			"	"	"	1Y		"		"		"	"
"	"	26	"	GND			15V	GND	"	"	"			"	"	"	2Y		"		"		"	"
"	"	27	"	"			GND	15V	"	"	"			"	"	"	2Y		"		"		"	"
"	"	28	"	"			"	GND	"	15V	"			"	"	"	3Y		"		"		"	"
"	"	29	"	"			"	"	"	GND	15V			"	"	"	3Y		"		"		"	"
"	"	30	"	"			"	"	"	"	GND			15V	"	"	4Y		"		"		"	"
"	"	31	"	"			"	"	"	"	GND			GND	15V	"	4Y		"		"		"	"
V_{IH1}		32	3.5V	1.5V			GND	GND	GND	GND	GND			GND	GND	5V	1Y		0.5		0.5		0.5	"
"		33	1.5V	3.5V			"	"	"	"	"			"	"	"	1Y		"		"		"	"
"		34	GND	GND			3.5V	1.5V	"	"	"			"	"	"	2Y		"		"		"	"
"		35	"	"			1.5V	3.5V	"	"	"			"	"	"	2Y		"		"		"	"
"		36	"	"			GND	GND	"	3.5V	1.5V			"	"	"	3Y		"		"		"	"
"		37	"	"			"	"	"	1.5V	3.5V			"	"	"	3Y		"		"		"	"
"		38	"	"			"	"	"	GND	GND			3.5V	1.5V	"	4Y		"		"		"	"
"		39	"	"			"	"	"	GND	GND			1.5V	3.5V	"	4Y		"		"		"	"
V_{IH2}		40	7.0V	3.0V			GND	GND	GND	GND	GND			GND	GND	10V	1Y		1.0		1.0		1.0	"
"		41	3.0V	7.0V			GND	GND	"	"	"			"	"	"	1Y		"		"		"	"
"		42	GND	GND			7.0V	3.0V	"	"	"			"	"	"	2Y		"		"		"	"
"		43	"	"			3.0V	7.0V	"	"	"			"	"	"	2Y		"		"		"	"
"		44	"	"			GND	GND	"	7.0V	3.0V			"	"	"	3Y		"		"		"	"
"		45	"	"			"	"	"	3.0V	7.0V			"	"	"	3Y		"		"		"	"
"		46	"	"			"	"	"	GND	GND			7.0V	3.0V	"	4Y		"		"		"	"
"		47	"	"			"	"	"	"	"			3.0V	7.0V	"	4Y		"		"		"	"

See notes at end of device type 54.

TABLE III. Group A inspection for device type 52 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/															Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	1A	1B	1Y	2Y	2A	2B	V_{SS}	3A	3B	3Y	4Y	4A	4B	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IH3}		48	11V	4.0V			GND	GND	GND	GND	GND			GND	GND	15V	1Y		1.5		1.5		1.5	Vdc
"		49	4.0V	11V			"	"	"	"	"			"	"	"	1Y		"		"		"	"
"		50	GND	GND			11V	4.0V	"	"	"			"	"	"	2Y		"		"		"	"
"		51	"	"			4.0V	11V	"	"	"			"	"	"	2Y		"		"		"	"
"		52	"	"			GND	GND	"	11V	4.0V			"	"	"	3Y		"		"		"	"
"		53	"	"			"	"	"	4.0V	11V			"	"	"	3Y		"		"		"	"
"		54	"	"			"	"	"	GND	GND			11V	4.0V	"	4Y		"		"		"	"
"		55	"	"			"	"	"	"	"			4.0V	11V	"	4Y		"		"		"	"
V_{IL1}		56	1.5V	1.5V			"	"	"	"	"			GND	GND	5V	1Y	4.5		4.5		4.5		"
"		57	GND	GND			1.5V	1.5V	"	"	"			GND	GND	"	2Y	"		"		"		"
"		58	GND	GND			GND	GND	"	1.5V	1.5V			GND	GND	"	3Y	"		"		"		"
"		59	GND	GND			GND	GND	"	GND	GND			1.5V	1.5V	"	4Y	"		"		"		"
V_{IL2}		60	3.0V	3.0V			GND	GND	"	GND	GND			GND	GND	10V	1Y	9.0		9.0		9.0		"
"		61	GND	GN D			3.0V	3.0V	"	GND	GND			GND	GND	"	2Y	"		"		"		"
"		62	GND	GND			GND	GND	"	3.0V	3.0V			GND	GND	"	3Y	"		"		"		"
"		63	GND	GND			GND	GND	"	GND	GND			3.0V	3.0V	"	4Y	"		"		"		"
V_{IL3}		64	4.0V	4.0V			GND	GND	"	GND	GND			GND	GND	15V	1Y	13.5		13.5		13.5		"
"		65	GND	GND			4.0V	4.0V	"	GND	GND			GND	GND	"	2Y	"		"		"		"
"		66	GND	"			GND	GND	"	4.0V	4.0V			GND	GND	"	3Y	"		"		"		"
"		67	GND	"			"	"	"	GND	GND			4.0V	4.0V	"	4Y	"		"		"		"
I_{OL1}		68	5V	"	0.4V		"	"	"	"	"			GND	GND	5V	1Y	0.51		0.36		0.64		mA
"		69	GND	5V	0.4V		"	"	"	"	"			"	"	"	1Y	"		"		"		"
"		70	"	GND		0.4V	5V	"	"	"	"			"	"	"	2Y	"		"		"		"
"		71	"	"		0.4V	GND	5V	"	"	"			"	"	"	2Y	"		"		"		"
"		72	"	"			"	GND	"	5V	"	0.4V		"	"	"	3Y	"		"		"		"
"		73	"	"			"	"	"	GND	5V	0.4V		"	"	"	3Y	"		"		"		"
"		74	"	"			"	"	"	"	GND		0.4V	5V	"	"	4Y	"		"		"		"
"		75	"	"			"	"	"	"	"		0.4V	GND	5V	"	4Y	"		"		"		"
I_{OL2}		76	1.5V	"	1.5V		"	"	"	"	"			"	GND	15V	1Y	3.4		2.4		4.2		mA
"		77	GND	1.5V	1.5V		"	"	"	"	"			"	"	"	1Y	"		"		"		"
"		78	"	GND		1.5V	1.5V	"	"	"	"			"	"	"	2Y	"		"		"		"
"		79	"	"		1.5V	GND	1.5V	"	"	"			"	"	"	2Y	"		"		"		"
"		80	"	"			"	GND	"	1.5V	"	1.5V		"	"	"	3Y	"		"		"		"
"		81	"	"			"	"	"	GND	1.5V	1.5V		"	"	"	3Y	"		"		"		"
"		82	"	"			"	"	"	"	GND		1.5V	1.5V	"	"	4Y	"		"		"		"
"		83	"	"			"	"	"	"	"		1.5V	GND	1.5V	"	4Y	"		"		"		"
I_{OH1}		84	GND	GND	4.6V		5V	5V	GND	5V	5V			5V	5V	5V	1Y	-0.51		-0.36		-0.64		mA
"		85	5V	5V		4.6V	GND	GND	"	5V	5V			5V	"	"	2Y	"		"		"		"
"		86	5V	5V			5V	5V	"	GND	GND	4.6V		5V	"	"	3Y	"		"		"		"
"		87	5V	5V			5V	5V	"	5V	5V		4.6V	GND	GND	"	4Y	"		"		"		"
I_{OH2}		88	GND	GND	13.5V		15V	15V	"	15V	15V			15V	15V	15V	1Y	-3.4		-2.4		-4.2		"
"		89	15V	15V		13.5V	GND	GND	"	15V	15V			15V	15V	"	2Y	"		"		"		"
"		90	15V	15V			15V	15V	"	GND	GND	13.5V		15V	15V	"	3Y	"		"		"		"
"		91	15V	15V			15V	15V	"	15V	15V		13.5V	GND	GND	"	4Y	"		"		"		"

See notes at end of device type 54.

TABLE III. Group A inspection for device type 52 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/															Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	1A	1B	1Y	2Y	2A	2B	V_{SS}	3A	3B	3Y	4Y	4A	4B	V_{DD}		Min	Max	Min	Max	Min	Max	
I_{IL} 3/	3009	92	GND	GND			GND	GND	GND	GND	GND			GND	GND	18.0V	All inputs together		-800					nA
"	"	93	"	"			"	"	"	"	"			"	"	"	1A		-100		-100			"
"	"	94	"	"			"	"	"	"	"			"	"	"	1B		"		"			"
"	"	95	"	"			"	"	"	"	"			"	"	"	2A		"		"			"
"	"	96	"	"			"	"	"	"	"			"	"	"	2B		"		"			"
"	"	97	"	"			"	"	"	"	"			"	"	"	3A		"		"			"
"	"	98	"	"			"	"	"	"	"			"	"	"	3B		"		"			"
"	"	99	"	"			"	"	"	"	"			"	"	"	4A		"		"			"
"	"	100	"	"			"	"	"	"	"			"	"	"	4B		"		"			"
I_{IH} 3/	3010	101	18.0V	18.0V			18.0V	18.0V	"	18.0V	18.0V			18.0V	18.0V	"	All inputs together		800					"
"	"	102	18.0V	GND			GND	GND	"	GND	GND			GND	GND	"	1A		100		100			"
"	"	103	GND	18.0V			GND	GND	"	"	"			"	"	"	1B		"		"			"
"	"	104	"	GND			18.0V	GND	"	"	"			"	"	"	2A		"		"			"
"	"	105	"	"			GND	18.0V	"	"	"			"	"	"	2B		"		"			"
"	"	106	"	"			"	GND	"	18.0V	"			"	"	"	3A		"		"			"
"	"	107	"	"			"	"	"	GND	18.0V			"	"	"	3B		"		"			"
"	"	108	"	"			"	"	"	GND	GND			18.0V	"	"	4A		"		"			"
"	"	109	"	"			"	"	"	GND	GND			GND	18.0V	"	4B		"		"			"
																		Subgroup 4 T_A = 25°C						
C_I	3012	110	4/						GND							GND	1A		12					pF
"	"	111		4/					"							"	1B		"					"
"	"	112					4/		"							"	2A		"					"
"	"	113						4/	"							"	2B		"					"
"	"	114							"	4/						"	3A		"					"
"	"	115							"		4/					"	3B		"					"
"	"	116							"					4/		"	4A		"					"
"	"	117							"						4/	"	4B		"					"
																		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
t_{PHL}	3003	118	5/	GND	6/		GND	GND	GND	GND	GND			GND	GND	5.0V	1A to 1Y	13	210	18	315	13	210	ns
"	Fig. 3	119	GND	5/	6/		GND	"	"	"	"			"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	120	"	GND		6/	5/	"	"	"	"			"	"	"	2A to 2Y	"	"	"	"	"	"	"
"	"	121	"	"		6/	GND	5/	"	"	"			"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	122	"	"			"	GND	"	5/	"	6/		"	"	"	3A to 3Y	"	"	"	"	"	"	"
"	"	123	"	"			"	"	"	GND	5/	6/		"	"	"	3B to 3Y	"	"	"	"	"	"	"
"	"	124	"	"			"	"	"	"	GND		6/	5/	"	"	4A to 4Y	"	"	"	"	"	"	"
"	"	125	"	"			"	"	"	"	"		6/	GND	5/	"	4B to 4Y	"	"	"	"	"	"	"
t_{PLH}	3003	126	5/	"	6/		"	"	"	"	"			"	GND	"	1A to 1Y	13	210	18	315	13	210	"
"	Fig. 3	127	GND	5/	6/		"	"	"	"	"			"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	128	"	GND		6/	5/	"	"	"	"			"	"	"	2A to 2Y	"	"	"	"	"	"	"
"	"	129	"	"		6/	GND	5/	"	"	"			"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	130	"	"			"	GND	"	5/	"	6/		"	"	"	3A to 3Y	"	"	"	"	"	"	"
"	"	131	"	"			"	"	"	GND	5/	6/		"	"	"	3B to 3Y	"	"	"	"	"	"	"
"	"	132	"	"			"	"	"	"	GND		6/	5/	"	"	4A to 4Y	"	"	"	"	"	"	"
"	"	133	"	"			"	"	"	"	"		6/	GND	5/	"	4B to 4Y	"	"	"	"	"	"	"

See notes at end of device type 54.

TABLE III. Group A inspection for device type 52 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/															Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Test No.	1A	1B	1Y	2Y	2A	2B	V_{SS}	3A	3B	3Y	4Y	4A	4B	V_{DD}		Min	Max	Min	Max	Min	Max	
t_{THL}	3004	134	5/	GND	6/		GND	GND	GND	GND	GND			GND	GND	5.0V	1Y	10	300	14	450	10	300	ns
"	Fig. 3	135	GND	5/	6/		"	"	"	"	"			"	"	"	1Y	"	"	"	"	"	"	"
"	"	136	"	GND		6/	5/	"	"	"	"			"	"	"	2Y	"	"	"	"	"	"	"
"	"	137	"	"		6/	GND	5/	"	"	"			"	"	"	2Y	"	"	"	"	"	"	"
"	"	138	"	"			"	GND	"	5/	"	6/		"	"	"	3Y	"	"	"	"	"	"	"
"	"	139	"	"			"	"	"	GND	5/	6/		"	"	"	3Y	"	"	"	"	"	"	"
"	"	140	"	"			"	"	"	"	GND		6/	5/	"	"	4Y	"	"	"	"	"	"	"
"	"	141	"	"			"	"	"	"	"		6/	GND	5/	"	4Y	"	"	"	"	"	"	"
t_{TLH}	3004	142	5/	GND	6/		"	"	"	"	"			"	GND	"	1Y	10	410	14	615	10	410	"
"	Fig. 3	143	GND	5/	6/		"	"	"	"	"			"	"	"	1Y	"	"	"	"	"	"	"
"	"	144	"	GND		6/	5/	"	"	"	"			"	"	"	2Y	"	"	"	"	"	"	"
"	"	145	"	"		6/	GND	5/	"	"	"			"	"	"	2Y	"	"	"	"	"	"	"
"	"	146	"	"			"	GND	"	5/	"	6/		"	"	"	3Y	"	"	"	"	"	"	"
"	"	147	"	"			"	"	"	GND	5/	6/		"	"	"	3Y	"	"	"	"	"	"	"
"	"	148	"	"			"	"	"	"	GND		6/	5/	"	"	4Y	"	"	"	"	"	"	"
"	"	149	"	"			"	"	"	"	"		6/	GND	5/	"	4Y	"	"	"	"	"	"	"

See notes at end of device type 54.

TABLE III. Group A inspection for device type 53.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	1Y	1A	1B	1C	1D	NC	V_{SS}	NC	2A	2B	2C	2D	2Y	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IC}		1		1mA												GND	1A		1.5					Vdc
(pos)		2			1mA											"	1B		"					"
"		3				1mA										"	1C		"					"
"		4					1mA									"	1D		"					"
"		5									1mA					"	2A		"					"
"		6										1mA				"	2B		"					"
"		7											1mA			"	2C		"					"
"		8												1mA		"	2D		"					"
V_{IC}		9		-1mA					GND								1A		-6					"
(neg)		10			-1mA				"								1B		"					"
"		11				-1mA			"								1C		"					"
"		12					-1mA		"								1D		"					"
"		13							"		-1mA						2A		"					"
"		14							"			-1mA					2B		"					"
"		15							"				-1mA				2C		"					"
"		16							"					-1mA			2D		"					"
I_{SS}	3005	17		GND	GND	GND	GND		"		GND	GND	GND	GND		18V	V_{SS}		-25		-750			nA
2/	"	18		"	GND	GND	18V		"		18V	GND	"	"		"	"		"		"			"
"	"	19		"	GND	18V	GND		"		GND	18V	"	"		"	"		"		"			"
"	"	20		"	18V	GND	GND		"		GND	GND	18V	"		"	"		"		"			"
"	"	21		18V	GND	GND	GND		"		GND	GND	GND	18V		"	"		"		"			"
V_{OH5}	3006	22		GND	GND	GND	GND		GND		15V	15V	15V	15V		15V	1Y	14.95		14.95		14.95		Vdc
V_{OH5}	3006	23		15V	15V	15V	15V		"		GND	GND	GND	GND		"	2Y	14.95		14.95		14.95		"
V_{OL6}	3007	24		15V	GND	GND	GND		"		"	"	"	"		"	1Y		0.05		0.05		0.05	"
"	"	25		GND	15V	GND	GND		"		"	"	"	"		"	1Y		"		"		"	"
"	"	26		"	GND	15V	GND		"		"	"	"	"		"	1Y		"		"		"	"
"	"	27		"	"	GND	15V		"		"	"	"	"		"	1Y		"		"		"	"
"	"	28		"	"	"	GND		"		15V	"	"	"		"	2Y		"		"		"	"
"	"	29		"	"	"	"		"		GND	15V	"	"		"	2Y		"		"		"	"
"	"	30		"	"	"	"		"		GND	GND	15V	"		"	2Y		"		"		"	"
"	"	31		"	"	"	"		"		GND	GND	GND	15V		"	2Y		"		"		"	"
V_{IH1}		32		3.5V	1.5V	1.5V	1.5V		GND		1.5V	1.5V	1.5V	1.5V		5V	1Y		0.5		0.5		0.5	Vdc
"		33		1.5V	3.5V	1.5V	1.5V		"		"	"	"	"		"	1Y		"		"		"	"
"		34		"	1.5V	3.5V	1.5V		"		"	"	"	"		"	1Y		"		"		"	"
"		35		"	"	1.5V	3.5V		"		"	"	"	"		"	1Y		"		"		"	"
"		36		"	"	"	1.5V		"		3.5V	"	"	"		"	2Y		"		"		"	"
"		37		"	"	"	"		"		1.5V	3.5V	"	"		"	2Y		"		"		"	"
"		38		"	"	"	"		"		1.5V	1.5V	3.5V	"		"	2Y		"		"		"	"
"		39		"	"	"	"		"		1.5V	1.5V	1.5V	3.5V		"	2Y		"		"		"	"
V_{IH2}		40		7.0V	3.0V	3.0V	3.0V		"		3.0V	3.0V	3.0V	3.0V		10V	1Y		1.0		1.0		1.0	"
"		41		3.0V	7.0V	3.0V	3.0V		"		"	"	"	"		"	1Y		"		"		"	"
"		42		"	3.0V	7.0V	3.0V		"		"	"	"	"		"	1Y		"		"		"	"
"		43		"	"	3.0V	7.0V		"		"	"	"	"		"	1Y		"		"		"	"
"		44		"	"	"	3.0V		"		7.0V	"	"	"		"	2Y		"		"		"	"
"		45		"	"	"	"		"		3.0V	7.0V	"	"		"	2Y		"		"		"	"
"		46		"	"	"	"		"		3.0V	3.0V	7.0V	"		"	2Y		"		"		"	"
"		47		"	"	"	"		"		3.0V	3.0V	3.0V	7.0V		"	2Y		"		"		"	"

See notes at end of device type 54.

TABLE III. Group A inspection for device type 53 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/															Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	1Y	1A	1B	1C	1D	NC	V_{SS}	NC	2A	2B	2C	2D	2Y	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IH3}		48		11V	4.0V	4.0V	4.0V		GND		4.0V	4.0V	4.0V	4.0V		15V	1Y		1.5		1.5		1.5	Vdc
"		49		4.0V	11V	4.0V	4.0V		"		"	"	"	"		"	1Y		"		"		"	"
"		50		"	4.0V	11V	4.0V		"		"	"	"	"		"	1Y		"		"		"	"
"		51		"	"	4.0V	11V		"		"	"	"	"		"	1Y		"		"		"	"
"		52		"	"	"	4.0V		"		11V	"	"	"		"	2Y		"		"		"	"
"		53		"	"	"	"		"		4.0V	11V	"	"		"	2Y		"		"		"	"
"		54		"	"	"	"		"		4.0V	4.0V	11V	"		"	2Y		"		"		"	"
"		55		"	"	"	"		"		4.0V	4.0V	4.0V	11V		"	2Y		"		"		"	"
V_{IL1}		56		1.5V	1.5V	1.5V	1.5V		"		5V	5V	5V	5V		5V	1Y	4.5		4.5		4.5		"
V_{IL1}		57		5V	5V	5V	5V		"		1.5V	1.5V	1.5V	1.5V		5V	2Y	4.5		4.5		4.5		"
V_{IL2}		58		3.0V	3.0V	3.0V	3.0V		"		10V	10V	10V	10V		10V	1Y	9.0		9.0		9.0		"
V_{IL2}		59		10V	10V	10V	10V		"		3.0V	3.0V	3.0V	3.0V		10V	2Y	9.0		9.0		9.0		"
V_{IL3}		60		4.0V	4.0V	4.0V	4.0V		"		15V	15V	15V	15V		15V	1Y	13.5		13.5		13.5		"
V_{IL3}		61		15V	15V	15V	15V		"		4.0V	4.0V	4.0V	4.0V		15V	2Y	13.5		13.5		13.5		"
I_{OL1}		62	0.4V	5V	GND	GND	GND		GND		GND	GND	GND	GND		5V	1Y	0.51		0.36		0.64		mA
"		63	"	GND	5V	GND	GND		"		"	"	"	"		"	1Y	"		"		"		"
"		64	"	"	GND	5V	GND		"		"	"	"	"		"	1Y	"		"		"		"
"		65	"	"	"	GND	5V		"		"	"	"	"		"	1Y	"		"		"		"
"		66		"	"	"	GND		"		5V	"	"	"	0.4V	"	2Y	"		"		"		"
"		67		"	"	"	"		"		GND	5V	"	"	"	"	2Y	"		"		"		"
"		68		"	"	"	"		"		"	GND	5V	"	"	"	2Y	"		"		"		"
"		69		"	"	"	"		"		"	"	GND	5V	"	"	2Y	"		"		"		"
I_{OL2}		70	1.5V	15V	"	"	"		"		"	"	"	GND		15V	1Y	3.4		2.4		4.2		"
"		71	"	GND	15V	"	"		"		"	"	"	"		"	1Y	"		"		"		"
"		72	"	"	GND	15V	"		"		"	"	"	"		"	1Y	"		"		"		"
"		73	"	"	"	GND	15V		"		"	"	"	"		"	1Y	"		"		"		"
"		74		"	"	"	GND		"		15V	"	"	"	1.5V	"	2Y	"		"		"		"
"		75		"	"	"	"		"		GND	15V	"	"	"	"	2Y	"		"		"		"
"		76		"	"	"	"		"		GND	GND	15V	"	"	"	2Y	"		"		"		"
"		77		"	"	"	"		"		GND	GND	GND	15V	"	"	2Y	"		"		"		"
I_{OH1}		78	4.6V	"	"	"	"		"		5V	5V	5V	5V		5V	1Y	-0.51		-0.36		-0.64		"
I_{OH1}		79		5V	5V	5V	5V		"		GND	GND	GND	GND	4.6V	5V	2Y	-0.51		-0.36		-0.64		"
I_{OH2}		80	13.5V	GND	GND	GND	GND		"		15V	15V	15V	15V		15V	1Y	-3.4		-2.4		-4.2		"
I_{OH2}		81		15V	15V	15V	15V		"		GND	GND	GND	GND	13.5V	15V	2Y	-3.4		-2.4		-4.2		"
I_{IL} 3/	3009	82		GND	GND	GND	GND		GND		GND	GND	GND	GND		18.0V	All inputs together		-8.0					nA
"	"	83		"	"	"	"		"		"	"	"	"		"	1A		-1.0		-45			"
"	"	84		"	"	"	"		"		"	"	"	"		"	1B		"		"			"
"	"	85		"	"	"	"		"		"	"	"	"		"	1C		"		"			"
"	"	86		"	"	"	"		"		"	"	"	"		"	1D		"		"			"
"	"	87		"	"	"	"		"		"	"	"	"		"	2A		"		"			"
"	"	88		"	"	"	"		"		"	"	"	"		"	2B		"		"			"
"	"	89		"	"	"	"		"		"	"	"	"		"	2C		"		"			"
"	"	90		"	"	"	"		"		"	"	"	"		"	2D		"		"			"

See notes at end of device type 54.

TABLE III. Group A inspection for device type 53 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/															Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	1Y	1A	1B	1C	1D	NC	V_{SS}	NC	2A	2B	2C	2D	2Y	V_{DD}		Min	Max	Min	Max	Min	Max	
I_{IH} 3/	3010	91		18.0V	18.0V	18.0V	18.0V		GND		18.0V	18.0V	18.0V	18.0V		18.0V	All inputs together		8.0					nA
"	"	92		18.0V	GND	GND	GND		"		GND	GND	GND	GND		"	1A		1.0		45			"
"	"	93		GND	18.0V	GND	GND		"		"	"	"	"		"	1B		"		"			"
"	"	94		"	GND	18.0V	GND		"		"	"	"	"		"	1C		"		"			"
"	"	95		"	"	GND	18.0V		"		"	"	"	"		"	1D		"		"			"
"	"	96		"	"	"	GND		"		18.0V	"	"	"		"	2A		"		"			"
"	"	97		"	"	"	"		"		GND	18.0V	"	"		"	2B		"		"			"
"	"	98		"	"	"	"		"		GND	GND	18.0V	"		"	2C		"		"			"
"	"	99		"	"	"	"		"		GND	GND	GND	18.0V		"	2D		"		"			"
																		Subgroup 4 T_A = 25°C						
C_i	3012	100		4/					GND							GND	1A		12					pF
"	"	101			4/				"							"	1B		"					"
"	"	102				4/			"							"	1C		"					"
"	"	103					4/		"							"	1D		"					"
"	"	104							"		4/					"	2A		"					"
"	"	105							"			4/				"	2B		"					"
"	"	106							"				4/			"	2C		"					"
"	"	107							"					4/		"	2D		"					"
																		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
t_{PHL}	3003	108	6/	5/	GND	GND	GND		GND		GND	GND	GND	GND		5.0V	1A to 1Y	10	210	14	315	10	210	ns
"	Fig. 3	109	"	GND	5/	GND	GND		"		"	"	"	"		"	1B to 1Y	"	"	"	"	"	"	"
"	"	110	"	"	GND	5/	GND		"		"	"	"	"		"	1C to 1Y	"	"	"	"	"	"	"
"	"	111	"	"	"	GND	5/		"		"	"	"	"		"	1D to 1Y	"	"	"	"	"	"	"
"	"	112		"	"	"	GND		"		5/	"	"	"	6/	"	2A to 2Y	"	"	"	"	"	"	"
"	"	113		"	"	"	"		"		GND	5/	"	"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	114		"	"	"	"		"		GND	GND	5/	"	"	"	2C to 2Y	"	"	"	"	"	"	"
"	"	115		"	"	"	"		"		GND	GND	GND	5/	"	"	2D to 2Y	"	"	"	"	"	"	"
t_{PLH}	3003	116	6/	5/	GND	GND	GND		GND		GND	GND	GND	GND		5.0V	1A to 1Y	10	210	14	315	10	210	ns
"	Fig. 3	117	"	GND	5/	GND	"		"		"	"	"	"		"	1B to 1Y	"	"	"	"	"	"	"
"	"	118	"	"	GND	5/	"		"		"	"	"	"		"	1C to 1Y	"	"	"	"	"	"	"
"	"	119	"	"	"	GND	5/		"		"	"	"	"		"	1D to 1Y	"	"	"	"	"	"	"
"	"	120		"	"	"	GND		"		5/	"	"	"	6/	"	2A to 2Y	"	"	"	"	"	"	"
"	"	121		"	"	"	"		"		GND	5/	"	"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	122		"	"	"	"		"		"	GND	5/	"	"	"	2C to 2Y	"	"	"	"	"	"	"
"	"	123		"	"	"	"		"		"	"	GND	5/	"	"	2D to 2Y	"	"	"	"	"	"	"
t_{THL}	3004	124	6/	5/	"	"	"		GND		"	"	"	GND		"	1Y	10	300	14	450	10	300	"
"	Fig. 3	125	"	GND	5/	"	"		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	126	"	"	GND	5/	"		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	127	"	"	"	GND	5/		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	128		"	"	"	GND		"		5/	"	"	"	6/	"	2Y	"	"	"	"	"	"	"
"	"	129		"	"	"	"		"		GND	5/	"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	130		"	"	"	"		"		"	GND	5/	"	"	"	2Y	"	"	"	"	"	"	"
"	"	131		"	"	"	"		"		"	"	GND	5/	"	"	2Y	"	"	"	"	"	"	"
t_{TLH}	"	132	6/	5/	"	"	"		GND		"	"	"	GND		"	1Y	10	410	14	615	10	410	"
"	"	133	"	GND	5/	"	"		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	134	"	"	GND	5/	"		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	135	"	"	"	GND	5/		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	136		"	"	"	GND		"		5/	"	"	"	6/	"	2Y	"	"	"	"	"	"	"
"	"	137		"	"	"	"		"		GND	5/	"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	138		"	"	"	"		"		GND	GND	5/	"	"	"	2Y	"	"	"	"	"	"	"
"	"	139		"	"	"	"		"		GND	GND	GND	5/	"	"	2Y	"	"	"	"	"	"	"

See notes at end of device type 54.

TABLE III. Group A inspection for device type 54.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	1A	1B	2A	2B	2C	2Y	V_{SS}	1C	1Y	3Y	3A	3B	3C	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IC}		1	1mA													GND	1A		1.5					Vdc
(pos)		2		1mA												"	1B		"					"
"		3								1mA						"	1C		"					"
"		4			1mA											"	2A		"					"
"		5				1mA										"	2B		"					"
"		6					1mA									"	2C		"					"
"		7											1mA			"	3A		"					"
"		8												1mA		"	3B		"					"
"		9													1mA	"	3C		"					"
V_{IC}		10	-1mA						GND								1A		-6					"
(neg)		11		-1mA					"								1B		"					"
"		12							"	-1mA							1C		"					"
"		13			-1mA				"								2A		"					"
"		14				-1mA			"								2B		"					"
"		15					-1mA		"								2C		"					"
"		16							"				-1mA				3A		"					"
"		17							"					-1mA			3B		"					"
"		18							"						-1mA		3C		"					"
I_{SS}	3005	19	18V	GND	18V	GND	GND		"	GND			18V	GND	GND	18V	V_{SS}		-25		-750			nA
2/	"	20	GND	18V	GND	18V	GND		"	GND			GND	18V	GND	"	V_{SS}		"		"			"
"	"	21	"	GND	GND	GND	18V		"	18V			"	GND	18V	"	V_{SS}		"		"			"
"	"	22	"	GND	GND	GND	GND		"	GND			"	GND	GND	"	V_{SS}		"		"			"
V_{OH5}	3006	23	GND	GND	15V	15V	15V		"	GND			15V	15V	15V	15V	1Y	14.95		14.95		14.95		Vdc
"	"	24	15V	15V	GND	GND	GND		"	15V			15V	15V	15V	"	2Y	14.95		14.95		14.95		"
"	"	25	15V	15V	15V	15V	15V		"	"			GND	GND	GND	"	3Y	14.95		14.95		14.95		"
V_{OL6}	3007	26	15V	GND	GND	GND	GND		"	GND			"	"	"	"	1Y		0.05		0.05		0.05	"
"	"	27	GND	15V	GND	"	"		"	GND			"	"	"	"	1Y		"		"		"	"
"	"	28	"	GND	GND	"	"		"	15V			"	"	"	"	1Y		"		"		"	"
"	"	29	"	"	15V	"	"		"	GND			"	"	"	"	2Y		"		"		"	"
"	"	30	"	"	GND	15V	"		"	"			"	"	"	"	2Y		"		"		"	"
V_{OL6}	3007	31	GND	GND	GND	GND	15V		GND	GND			GND	GND	GND	15V	2Y		0.05		0.05		0.05	Vdc
"	"	32	"	"	"	"	GND		"	"			15V	GND	"	"	3Y		"		"		"	"
"	"	33	"	"	"	"	"		"	"			GND	15V	"	"	3Y		"		"		"	"
"	"	34	"	"	"	"	"		"	"			GND	GND	15V	"	3Y		"		"		"	"
V_{IH1}		35	3.5V	1.5V	1.5V	1.5V	1.5V		"	1.5V			1.5V	1.5V	1.5V	5V	1Y		0.5		0.5		0.5	"
"		36	1.5V	3.5V	1.5V	"	"		"	1.5V			"	"	"	"	1Y		"		"		"	"
"		37	"	1.5V	1.5V	"	"		"	3.5V			"	"	"	"	1Y		"		"		"	"
"		38	"	"	3.5V	"	"		"	1.5V			"	"	"	"	2Y		"		"		"	"
"		39	"	"	1.5V	3.5V	"		"	"			"	"	"	"	2Y		"		"		"	"
"		40	"	"	"	1.5V	3.5V		"	"			"	"	"	"	2Y		"		"		"	"
"		41	"	"	"	"	1.5V		"	"			3.5V	"	"	"	3Y		"		"		"	"
"		42	"	"	"	"	"		"	"			1.5V	3.5V	"	"	3Y		"		"		"	"
"		43	"	"	"	"	"		"	"			1.5V	1.5V	3.5V	"	3Y		"		"		"	"
V_{IH2}		44	7.0V	3.0V	3.0V	3.0V	3.0V		"	3.0V			3.0V	3.0V	3.0V	10V	1Y		1.0		1.0		1.0	"
"		45	3.0V	7.0V	"	"	"		"	3.0V			"	"	"	"	1Y		"		"		"	"
"		46	"	3.0V	"	"	"		"	7.0V			"	"	"	"	1Y		"		"		"	"
"		47	"	"	7.0V	"	"		"	3.0V			"	"	"	"	2Y		"		"		"	"
"		48	"	"	3.0V	7.0V	"		"	"			"	"	"	"	2Y		"		"		"	"
"		49	"	"	"	3.0V	7.0V		"	"			"	"	"	"	2Y		"		"		"	"
"		50	"	"	"	"	3.0V		"	"			7.0V	"	"	"	3Y		"		"		"	"
"		51	"	"	"	"	3.0V		"	"			3.0V	7.0V	"	"	3Y		"		"		"	"
"		52	"	"	"	"	3.0V		"	"			3.0V	3.0V	7.0V	"	3Y		"		"		"	"

See notes at end of device type 54.

TABLE III. Group A inspection for device type 54 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	1A	1B	2A	2B	2C	2Y	V_{SS}	1C	1Y	3Y	3A	3B	3C	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IH3}		53	11V	4.0V	4.0V	4.0V	4.0V		GND	4.0V			4.0V	4.0V	4.0V	15V	1Y		1.5		1.5		1.5	Vdc
“		54	4.0V	11V	4.0V	“	“		“	4.0V			“	“	“	“	1Y		“		“		“	“
“		55	“	4.0V	4.0V	“	“		“	11V			“	“	“	“	1Y		“		“		“	“
“		56	“	“	11V	“	“		“	4.0V			“	“	“	“	2Y		“		“		“	“
“		57	“	“	4.0V	11V	“		“	“			“	“	“	“	2Y		“		“		“	“
“		58	“	“	“	4.0V	11V		“	“			“	“	“	“	2Y		“		“		“	“
“		59	“	“	“	“	4.0V		“	“			11V	“	“	“	3Y		“		“		“	“
“		60	“	“	“	“	4.0V		“	“			4.0V	11V	“	“	3Y		“		“		“	“
“		61	“	“	“	“	4.0V		“	“			4.0V	4.0V	11V	“	3Y		“		“		“	“
V_{IL1}		62	1.5V	1.5V	5V	5V	5V		GND	1.5V			5V	5V	5V	5V	1Y	4.5		4.5		4.5		Vdc
“		63	5V	5V	1.5V	1.5V	1.5V		“	5V			5V	5V	5V	5V	2Y	“		“		“		“
“		64	5V	5V	5V	5V	5V		“	5V			1.5V	1.5V	1.5V	5V	3Y	“		“		“		“
V_{IL2}		65	3.0V	3.0V	10V	10V	10V		“	3.0V			10V	10V	10V	10V	1Y	9.0		9.0		9.0		Vdc
V_{IL2}		66	10V	10V	3.0V	3.0V	3.0V		“	10V			10V	10V	10V	10V	2Y	“		“		“		“
V_{IL2}		67	10V	10V	10V	10V	10V		“	10V			3.0V	3.0V	3.0V	10V	3Y	“		“		“		“
V_{IL3}		68	4.0V	4.0V	15V	15V	15V		“	4.0V			15V	15V	15V	15V	1Y	13.5		13.5		13.5		Vdc
V_{IL3}		69	15V	15V	4.0V	4.0V	4.0V		“	15V			15V	15V	15V	15V	2Y	“		“		“		“
V_{IL3}		70	15V	15V	15V	15V	15V		“	15V			4.0V	4.0V	4.0V	15V	3Y	“		“		“		“
I_{OL1}		71	5V	GND	GND	GND	GND		“	GND	0.4V		GND	GND	GND	5V	1Y	0.51		0.36		0.64		mA
“		72	GND	5V	“	“	“		“	GND	0.4V		“	“	“	“	1Y	“		“		“		“
“		73	“	GND	“	“	“		“	5V	0.4V		“	“	“	“	1Y	“		“		“		“
“		74	“	“	5V	“	“	0.4V	“	GND			“	“	“	“	2Y	“		“		“		“
“		75	“	“	GND	5V	“	0.4V	“	“			“	“	“	“	2Y	“		“		“		“
“		76	“	“	“	GND	5V	0.4V	“	“			“	“	“	“	2Y	“		“		“		“
“		77	“	“	“	“	GND		“	“		0.4V	5V	“	“	“	3Y	“		“		“		“
“		78	“	“	“	“	“		“	“		0.4V	GND	5V	“	“	3Y	“		“		“		“
“		79	“	“	“	“	“		“	“		0.4V	GND	GND	5V	“	3Y	“		“		“		“
I_{OL2}		80	15V	“	“	“	“		“	“	1.5V		“	“	GND	15V	1Y	3.4		2.4		4.2		“
“		81	GND	15V	“	“	“		“	“	1.5V		“	“	“	“	1Y	“		“		“		“
“		82	“	GND	“	“	“		“	15V	1.5V		“	“	“	“	1Y	“		“		“		“
“		83	“	“	15V	“	“	1.5V	“	GND			“	“	“	“	2Y	“		“		“		“
“		84	“	“	GND	15V	“	1.5V	“	“			“	“	“	“	2Y	“		“		“		“
“		85	“	“	“	GND	15V	1.5V	“	“			“	“	“	“	2Y	“		“		“		“
“		86	“	“	“	“	GND		“	“		1.5V	15V	“	“	“	3Y	“		“		“		“
“		87	“	“	“	“	GND		“	“		1.5V	GND	15V	“	“	3Y	“		“		“		“
“		88	“	“	“	“	GND		“	“		1.5V	GND	GND	15V	“	3Y	“		“		“		“
I_{OH1}		89	GND	GND	5V	5V	5V		GND	GND	4.6V		5V	5V	5V	5V	1Y	-0.51		-0.36		-0.64		mA
“		90	5V	5V	GND	GND	GND	4.6V	“	5V			5V	5V	5V	5V	2Y	-0.51		-0.36		-0.64		“
“		91	5V	5V	5V	5V	5V		“	5V		4.6V	GND	GND	GND	5V	3Y	-0.51		-0.36		-0.64		“
I_{OH2}		92	GND	GND	15V	15V	15V		“	GND	13.5V		15V	15V	15V	15V	1Y	-3.4		-2.4		-4.2		“
“		93	15V	15V	GND	GND	GND	13.5V	“	15V			15V	15V	15V	15V	2Y	-3.4		-2.4		-4.2		“
“		94	15V	15V	15V	15V	15V		“	15V		13.5V	GND	GND	GND	15V	3Y	-3.4		-2.4		-4.2		“

See notes at end of device type 54.

TABLE III. Group A inspection for device type 54 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Test No.	1A	1B	2A	2B	2C	2Y	V_{SS}	1C	1Y	3Y	3A	3B	3C	V_{DD}		Min	Max	Min	Max	Min	Max	
I_{IL} 3/	3009	95	GND	GND	GND	GND	GND		GND	GND			GND	GND	GND	18.0V	All inputs together		-900					nA
"	"	96	GND	GND	GND	GND	GND		GND	GND			GND	GND	GND	18.0V	1A		-100		-100			"
"	"	97	"	"	"	"	"		"	"			"	"	"	"	1B		"		"			"
"	"	98	"	"	"	"	"		"	"			"	"	"	"	1C		"		"			"
"	"	99	"	"	"	"	"		"	"			"	"	"	"	2A		"		"			"
"	"	100	"	"	"	"	"		"	"			"	"	"	"	2B		"		"			"
"	"	101	"	"	"	"	"		"	"			"	"	"	"	2C		"		"			"
"	"	102	"	"	"	"	"		"	"			"	"	"	"	3A		"		"			"
"	"	103	"	"	"	"	"		"	"			"	"	"	"	3B		"		"			"
"	"	104	"	"	"	"	"		"	"			"	"	"	"	3C		"		"			"
I_{IH} 3/	3010	105	18.0V	18.0V	18.0V	18.0V	18.0V		GND	18.0V			18.0V	18.0V	18.0V	18.0V	All inputs together		900					"
"	"	106	18.0V	GND	GND	GND	GND		GND	GND			GND	GND	GND	18.0V	1A		100		100			"
"	"	107	GND	18.0V	GND	"	"		"	GND			"	"	"	"	1B		"		"			"
"	"	108	"	GND	GND	"	"		"	18.0V			"	"	"	"	1C		"		"			"
"	"	109	"	"	18.0V	"	"		"	GND			"	"	"	"	2A		"		"			"
"	"	110	"	"	GND	18.0V	"		"	"			"	"	"	"	2B		"		"			"
"	"	111	"	"	"	GND	18.0V		"	"			"	"	"	"	2C		"		"			"
"	"	112	"	"	"	"	GND		"	"			18.0V	"	"	"	3A		"		"			"
"	"	113	"	"	"	"	"		"	"			GND	18.0V	"	"	3B		"		"			"
"	"	114	"	"	"	"	"		"	"			GND	GND	18.0V	"	3C		"		"			"
																		Subgroup 4 T_A = 25°C						
																		Min	Max					
C_I	3012	115	4/						GND							GND	1A		12					pF
"	"	116		4/					"							"	1B		"					"
"	"	117							"	4/						"	1C		"					"
"	"	118			4/				"							"	2A		"					"
"	"	119				4/			"							"	2B		"					"
"	"	120					4/		"							"	2C		"					"
"	"	121							"				4/			"	3A		"					"
"	"	122							"					4/		"	3B		"					"
"	"	123							"						4/	"	3C		"					"

See notes at end of device type 54.

TABLE III. Group A inspection for device type 54 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D T,X,Y	TERMINAL CONDITIONS 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Test No.	1A	1B	2A	2B	2C	2Y	V_{SS}	1C	1Y	3Y	3A	3B	3C	V_{DD}		Min	Max	Min	Min	Max	Min	
t_{PHL}	3003	124	5/	GND	GND	GND	GND		GND	GND	6/		GND	GND	GND	5.0V	1A to 1Y	10	210	14	315	10	210	ns
"	Fig. 3	125	GND	5/	"	"	"		"	GND	6/		"	"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	126	"	GND	"	"	"		"	5/	6/		"	"	"	"	1C to 1Y	"	"	"	"	"	"	"
"	"	127	"	"	5/	"	"	6/	"	GND			"	"	"	"	2A to 2Y	"	"	"	"	"	"	"
"	"	128	"	"	GND	5/	"	6/	"	"			"	"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	129	"	"	"	GND	5/	6/	"	"			"	"	"	"	2C to 2Y	"	"	"	"	"	"	"
"	"	130	"	"	"	"	GND		"	"		6/	5/	"	"	"	3A to 3Y	"	"	"	"	"	"	"
"	"	131	"	"	"	"	"		"	"		6/	GND	5/	"	"	3B to 3Y	"	"	"	"	"	"	"
"	"	132	"	"	"	"	"		"	"		6/	GND	GND	5/	"	3C to 3Y	"	"	"	"	"	"	"
t_{PLH}	3003	133	5/	GND	GND	GND	GND		GND	GND	6/		GND	GND	GND	5.0V	1A to 1Y	10	210	14	315	10	210	"
"	Fig. 3	134	GND	5/	"	"	"		"	GND	6/		"	"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	135	"	GND	"	"	"		"	5/	6/		"	"	"	"	1C to 1Y	"	"	"	"	"	"	"
"	"	136	"	"	5/	"	"	6/	"	GND			"	"	"	"	2A to 2Y	"	"	"	"	"	"	"
"	"	137	"	"	GND	5/	"	6/	"	"			"	"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	138	"	"	"	GND	5/	6/	"	"			"	"	"	"	2C to 2Y	"	"	"	"	"	"	"
"	"	139	"	"	"	"	GND		"	"		6/	5/	"	"	"	3A to 3Y	"	"	"	"	"	"	"
"	"	140	"	"	"	"	"		"	"		6/	GND	5/	"	"	3B to 3Y	"	"	"	"	"	"	"
"	"	141	"	"	"	"	"		"	"		6/	GND	GND	5/	"	3C to 3Y	"	"	"	"	"	"	"
																		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
																		Min	Max	Min	Max	Min	Max	
t_{THL}	3004	142	5/	GND	GND	GND	GND		GND	GND	6/		GND	GND	GND	5.0V	1Y	10	300	14	450	10	300	ns
"	Fig. 3	143	GND	5/	"	"	"		"	GND	6/		"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	144	"	GND	"	"	"		"	5/	6/		"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	145	"	"	5/	"	"	6/	"	GND			"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	146	"	"	GND	5/	"	6/	"	"			"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	147	"	"	"	GND	5/	6/	"	"			"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	148	"	"	"	"	GND		"	"		6/	5/	"	"	"	3Y	"	"	"	"	"	"	"
"	"	149	"	"	"	"	"		"	"		6/	GND	5/	"	"	3Y	"	"	"	"	"	"	"
"	"	150	"	"	"	"	"		"	"		6/	GND	GND	5/	"	3Y	"	"	"	"	"	"	"
t_{TLH}	"	151	5/	GND	GND	GND	GND		GND	"	6/		GND	GND	GND	5.0V	1Y	10	410	14	615	10	410	"
"	"	152	GND	5/	"	"	"		"	"	6/		"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	153	"	GND	"	"	"		"	5/	6/		"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	154	"	"	5/	"	"	6/	"	GND			"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	155	"	"	GND	5/	"	6/	"	"			"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	156	"	"	"	GND	5/	6/	"	"			"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	157	"	"	"	"	GND		"	"		6/	5/	"	"	"	3Y	"	"	"	"	"	"	"
"	"	158	"	"	"	"	GND		"	"		6/	GND	5/	"	"	3Y	"	"	"	"	"	"	"
"	"	159	"	"	"	"	GND		"	"		6/	GND	GND	5/	"	3Y	"	"	"	"	"	"	"

1/ Input pins not designated may be tied to V_{CC} or GND or may be left open provided they do not influence the outcome of the measurement. Output pins not designated may be tied to the loads or may be left open provided they do not influence the outcome of the measurement, except as follows: V_{IC}(pos) tests; the V_{SS} terminals shall be open. V_{IC}(neg) tests; the V_{DD} terminal shall be open. I_{SS} tests; the output terminals shall be open.

2/ When performing quiescent supply current measurements (I_{SS}), the meter shall be placed so that all currents flow thru the meter.

3/ The device manufacturer may, at his option, measure I_{IL} and I_{IH} at 25°C for each individual input or measure all inputs together.

4/ Capacitance bridge between measured terminal and V_{SS}; frequency = 1 MHz.

5/ Pulse conditions – See figure 3.

6/ Loading conditions – See figure 3.

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.

4.4.5 Group E inspection. Group E inspection is required only for parts intended to be marked as radiation hardness assured (see 3.7 herein). RHA levels for device classes B and S shall be as specified in MIL-PRF-38535 and 4.5.4 herein.

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

4.5.1 Voltage and current. Unless otherwise specified, all voltages given are referenced to the microcircuit V_{SS} terminal. Currents given are conventional current and positive when flowing into the referenced terminal.

4.5.2 Burn-in and life test cool down procedures. When the burn-in and life tests are completed and prior to removal of bias voltages, the devices under test (DUT) shall be cooled to a temperature of 25°C ±3°C; then, electrical parameter end-point measurements shall be performed.

TABLE IV. Delta limits at 25°C.

Parameter 1/	Device types	
	01-04	51-54
I_{SS}	±10 nA	±10 nA
V_{OL1}	±0.04 V	
V_{OH1}	±0.08 V	
I_{OL1}		±15%
I_{OH1}		±15%

1/ Each of the above parameters shall be recorded before and after the required burn-in and life tests to determine delta (Δ).

4.5.3 Quiescent supply current (I_{SS} test). When performing quiescent supply current measurements (I_{SS}), the meter shall be placed so that all currents flow through the meter.

4.5.4 Radiation hardness assurance (RHA) testing. The RHA testing shall be performed in accordance with test procedures and sampling specified in MIL-PRF-38535 and herein.

a. Before irradiation, selected samples shall be assembled in qualified packages and pass the governing electrical parameters (group A subgroup 1 at 25°C) and also be subjected to the threshold-voltage test in table VII in order to calculate the delta threshold (ΔV_T) after irradiation.

b. The devices shall be subjected to a total radiation dose as specified in MIL-PRF-38535 for the radiation hardness assurance level being tested, and meet the end-point electrical parameters as defined in table V at 25°C, after exposure. The start and completion of the end-point electrical parameter measurements shall not exceed 2 hours following irradiation.

c. Threshold-voltage test circuit conditions shall be as specified in table VII and on figure 4. In situ and remote testing, the tests shall be performed with the devices biased in accordance with table VI and the bias may be interrupted for up to 1 minute to remove devices to the remote bias fixture.

d. After irradiation, the devices shall pass the truth table test as specified in subgroup 7 in table III or if subgroup 7 is not required, then an equivalent truth table test shall be performed.

TABLE V. Radiation hardened end-point electrical parameters at 25°C.

Parameter	All device types	V_{DD}	
		Device types	
		01-04	51-54
V_{TN}	0.3 V min	10 V	10 V
V_{TP}	2.8 V max	10 V	10 V
ΔV_T	1.4 V	10 V	10 V
I_{SS}	100 x max limit	15 V	18 V
t_{PLH}	1.35 x max limit	5 V	5 V
t_{PHL}	1.35 x max limit	5 V	5 V

TABLE VI. Bias during exposure to radiation.

Device type	Pin connections 1/		
	V_{DD} = 10 V dc (through a 30 kΩ to 60 kΩ resistor)	V_{SS} = GND	V_{DD} = 10 V dc
01, 51	3, 4, 5, 8, 11, 12, 13	7	14
02, 52	1, 2, 5, 6, 8, 9, 12, 13	7	14
03, 53	2, 3, 4, 5, 9, 10, 11, 12	7	14
04, 54	1, 2, 3, 4, 5, 8, 11, 12, 13	7	14

1/ Pins not designated are open, or tied to 10 V dc through a 30 kΩ to 60 kΩ resistor.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements are as specified in the contract or order (see 6.2). When actual packaging of material is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department of 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.

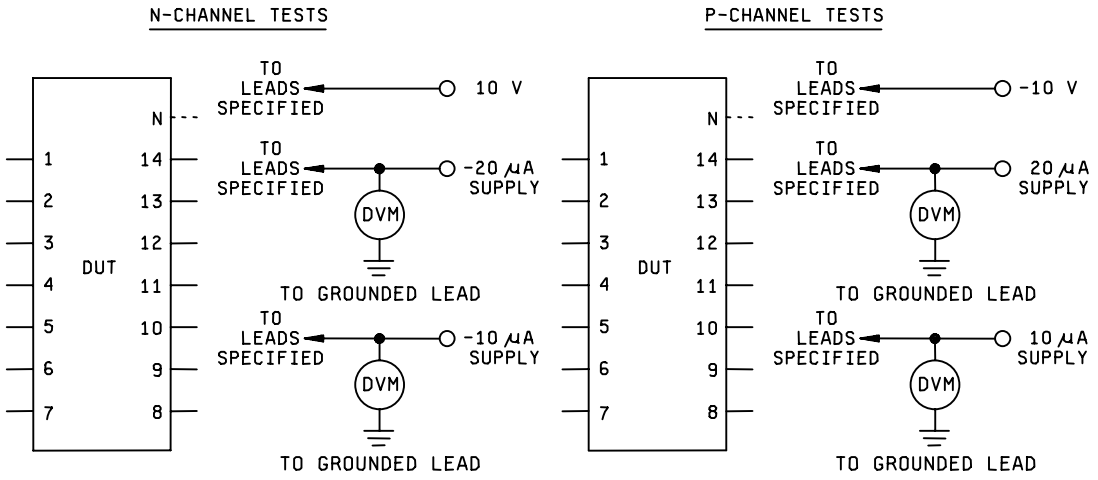


FIGURE 4. Threshold-voltage test circuit.

TABLE VII. Threshold-voltage test circuit conditions.

Device type	GND	10 V	V_{TN} measured at		GND	-10 V	V_{TP} measured at	
			-20 µA supply	-10 µA supply			20 µA supply	10 µA supply
01, 51	3	14		1, 2, 4, 5, 7, 8, 11-13	3	1, 2, 4, 5, 7, 8, 11-13		14
02, 52	1	14		2, 5-9, 12, 13	1	2, 5-9, 12, 13		14
03, 53	2	14		3-5, 7, 9-12	2	3-5, 7, 9-12		14
04, 54	3	14		1, 2, 4, 5, 7, 8, 11-13	3	1, 2, 4, 5, 7, 8, 11-13		14

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 quality 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 and radiation hardness 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 contractors 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, P.O. Box 3990, Columbus, Ohio 43218-3990.

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:

C_I ..... Input terminal-to-GND capacitance.
GND ..... Ground zero voltage potential.
I_{SS} ..... Quiescent supply current.
T_A ..... Free air temperature.
V_{DD}..... Positive supply voltage.
V_{IC}(pos)..... Positive clamping input to V_{DD}.
V_{IC}(neg) ..... Negative clamping input to V_{SS}.
V_{SS}..... Negative supply voltage.

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 S for National Aeronautics and Space Administration or class B for Department of Defense (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 Data reporting. When specified in the purchase order or contract, a copy of the following data, as applicable, will be supplied.

a. Attributes data for all screening tests (see 4.2) and variables data for all static burn-in, dynamic burn-in, and steady-state life tests (see 3.6).

b. A copy of each radiograph.

c. The technology conformance inspection (TCI) data (see 4.4).

d. Parameter distribution data on parameters evaluated during burn-in (see 3.6).

e. Final electrical parameters data (see 4.2d).

f. RHA delta limits.

6.8 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, post irradiation performance or reliability factors equivalent to MIL-M-38510 device types and may have slight physical variations in relation to case size. The presence of this information 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	4000A
02	4001A
03	4002A
04	4025A
51	4000B
52	4001B
53	4002B
54	4025B

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 extent of the changes.

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

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

Preparing activity:
DLA - CC

(Project 5962-2064)

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 ASSIST Online database at http://assist.daps.dla.mil.