INCH-POUND

MIL-M-38510/55G
22 February 2005

SUPERSEDING
MIL-M-38510/55F
30 April 1984

MILITARY SPECIFICATION
MICROCIRCUITS, DIGITAL, CMOS, BUFFER/CONVERTER,
TRUE/COMPLIMENT BUFFER, MONOLITHIC SILICON

Reactivated after 22 February 2005 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 consists 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 For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535 (see 6.3).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 and 03	Inverting hex buffer
02 and 04	Noninverting hex buffer
05	Quad true/compliment buffer
51 and 53	Inverting hex buffer
52 and 54	Noninverting hex buffer
55	Quad true/compliment buffer

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
E	GDIP1-T16 or CDIP2-T16	16	Dual-in-line
F	GDFP2-F16 or CDFP3-F16	16	Flat pack
N	CDFP4-F16	16	Flat pack
T	CDFP3-F14	14	Flat pack
X 1/ 2/	GDFP5-F14 or CDFP6-F14	14	Flat pack, except A dimension equals 0.100” (2.54 mm) max
Y 1/ 2/	GDFP1-F14 or CDFP2-F14	14	Flat pack, except A dimension equals 0.100” (2.54 mm) max
Z 1/ 2/	GDFP2-F16 or CDFP3-F16	16	Flat pack, except A dimension equals 0.100” (2.54 mm) max

1/ As an exception to nickel plate or undercoating paragraphs of MIL-PRF-38535, appendix A, for case outlines X, Y, and Z only, the leads of bottom brazed ceramic packages (i.e., configuration 2 of case outlines A, D, or F) 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, Y, and Z 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.

Device types 01 and 02

Supply voltage range (V_{DD} - V_{SS}):	
$V_{CC} \leq V_{DD}$	-0.5 V to +15.5 V
Output load capacitance (each output)	200 pF when V_{CC} > 10 V dc
Input voltage range	$(V_{SS}$ - 0.5 V) ≤ $V_I \leq (V_{DD}$ + 0.5 V)

Device types 51 and 52

Supply voltage range (V_{DD} - V_{SS}):	
$V_{CC} \leq V_{DD}$	-0.5 V to +18.0 V
Output load capacitance (each output)	200 pF when V_{CC} > 10 V dc
Input voltage range	$(V_{SS}$ - 0.5 V) ≤ $V_I \leq (V_{DD}$ + 0.5 V)
DC output source or sink current per pin	I_{OH} = -0.4 mA I_{OL} = +12.0 mA
DC supply current, per pin (I_{DD}, I_{CC})	-25.0 mA
DC ground current, per pin (I_{GND})	+50.0 mA

Device types 03 and 04

Supply voltage range (V_{CC} - V_{SS})	-0.5 V to +15.5 V
Input voltage range	$(V_{SS}$ - 0.5 V) ≤ $V_I \leq (V_{DD}$ + 0.5 V)

Device types 53 and 54

Supply voltage range (V_{DD} - V_{SS})	-0.5 V to +18.0 V
Input voltage range	$(V_{SS}$ - 0.5 V) ≤ $V_I \leq (V_{DD}$ + 0.5 V)
DC output source or sink current per pin	I_{OH} or I_{OL} = ±12.0 mA
DC supply current or ground current, per pin (I_{CC}, I_{GND})	±50.0 mA

Device type 05

Supply voltage range (V_{DD} - V_{SS})	-0.5 V to +15.0 V
Input voltage range	$(V_{SS}$ - 0.5 V) ≤ $V_I \leq (V_{DD}$ + 0.5 V)

Device type 55

Supply voltage range (V_{DD} - V_{SS})	-0.5 V to +18.0 V
Input voltage range	$(V_{SS}$ - 0.5 V) ≤ $V_I \leq (V_{DD}$ + 0.5 V)
DC output source or sink current per pin:	
True compliment	I_{OH} or I_{OL} = ±12.0 mA
Compliment output	I_{OH} or I_{OL} = ±6.0 mA
DC supply or ground current, per pin (I_{DD}, I_{GND})	±50.0 mA

All device types

Input current (each input)	±10 mA
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_{CC} or V_{DD} - V_{SS}):	
Device types 01, 02, 03, 04, and 05	4.5 V dc to 12.5 V dc
Device types 51, 52, 53, 54, and 55	4.5 V dc to 15.0 V dc
Input low voltage range (V_{IL}):	
Device types 01, 02, 03, 04, and 05	0.0 V to 0.85 V dc @ V_{CC} or V_{DD} = 5.0 V dc
	0.0 V to 2.1 V dc @ V_{CC} or V_{DD} = 12.5 V dc
Device types 51, 52, 53, 54, and 55	V_{OL} = 10% V_{CC} or V_{DD}, V_{OH} = 90% V_{CC} or V_{DD}
	0.0 V to 1.5 V dc @ V_{CC} or V_{DD} = 5.0 V dc
	0.0 V to 2.0 V dc @ V_{CC} or V_{DD} = 10.0 V dc
	0.0 V to 4.0 V dc @ V_{CC} or V_{DD} = 15.0 V dc
Input high voltage range (V_{IH}): 1/	
Device types 01, 02, 03, 04, and 05	3.95 V to 5.0 V dc @ V_{CC} or V_{DD} = 5.0 V dc
	10 V to 12.5 V dc @ V_{CC} or V_{DD} = 12.5 V dc
Device types 51, 52, 53, 54, and 55	V_{OL} = 10% V_{CC} or V_{DD}, V_{OH} = 90% V_{CC} or V_{DD}
	3.5 V to 5.0 V dc @ V_{CC} or V_{DD} = 5.0 V dc
	8.0 V to 10.0 V dc @ V_{CC} or V_{DD} = 10.0 V dc
	11.0 V to 15.0 V dc @ V_{CC} or V_{DD} = 15.0 V dc
Load capacitance	50 pF maximum
Case operating temperature range (T_C)	-55°C to +125°C

2. APPLICABLE DOCUMENTS

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

2.2 Government documents.

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

DEPARTMENT OF DEFENSE 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 http://assist.daps.dla.mil/ or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Order of precedence. In the event of a conflict between the text of this 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.

1/ The input high voltage (V_{IH}) can exceed the power supply voltage (V_{CC}) up to the maximum rating when device types 03, 04, 53, and 54 are used for logic level conversion.

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 case 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 37 (see MIL-PRF-38535, appendix A).

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions $-55°C \le T_C \le +125°C$, V_{SS} = 0 V Unless otherwise specified	Device type 1/	Limits		Unit
				Min	Max	
Positive clamping input to V_{DD} or V_{CC}	$V_{IC(POS)}$	T_C = 25°C, V_{DD} and V_{CC} = GND, V_{SS} = Open, Output = Open, I_I = 1 mA	01, 02, 05, 51, 52, 55		+1.5	V dc
Negative clamping input to V_{SS}	$V_{IC(NEG)}$	T_C = 25°C, V_{DD} and V_{CC} = Open, V_{SS} = GND, Output = Open, I_I = -1 mA	All		-6.0	V dc
Quiescent supply current	I_{SS}	V_{DD} and V_{CC} = 15 V dc, any combination of inputs	01-05		-750	nA dc
		V_{DD} and V_{CC} = 18 V dc, any combination of inputs	51-55		-750	
High level output voltage	V_{OH1}	V_{DD} and V_{CC} = 4.5 V dc, I_{OH} = -0.1 mA (see table III)	01-05	2.50		V dc
	V_{OH2}	V_{DD} and V_{CC} = 5 V dc, I_{OH} = -0.35 mA (see table III)	01-05	4.5		
	V_{OH3}	V_{DD} and V_{CC} = 5 V dc, I_{OH} = 0.0 mA (see table III)	01-05	4.95		
	V_{OH4}	V_{DD} and V_{CC} = 12.5 V dc, I_{OH} = 0.0 mA (see table III)	01-05	11.25		
	V_{OH5}	V_{DD} and V_{CC} = 15 V dc, I_{OH} = 0.0 mA (see table III)	51-55	14.95		
Low level output voltage	V_{OL1}	V_{DD} and V_{CC} = 5.5 V dc, I_{OL} = 0.23 mA (see table III)	01-05		0.5	V dc
	V_{OL2}	V_{DD} and V_{CC} = 5 V dc, I_{OL} = 2.1 mA (see table III)	01-05		0.5	
	V_{OL3}	V_{DD} and V_{CC} = 5 V dc, I_{OL} = 0.0 mA (see table III)	01-05		0.05	
	V_{OL4}	V_{DD} and V_{CC} = 12.5 V dc, I_{OL} = 0.0 mA (see table III)	01-05		1.25	
	V_{OL5}	V_{DD} and V_{CC} = 15 V dc, I_{OL} = 0.0 mA (see table III)	51-55		0.05	
Input high voltage	V_{IH1}	V_{DD} and V_{CC} = 5 V dc, V_O = (See table III), $\lvert I_O \rvert \le 1\mu A$	51, 53	4.0		V dc
			52, 54, 55	3.5		
	V_{IH2}	V_{DD} and V_{CC} = 10 V dc, V_O = (See table III), $\lvert I_O \rvert \le 1\mu A$	51, 53	8.0		V dc
			52, 54, 55	7.0		
	V_{IH3}	V_{DD} and V_{CC} = 15 V dc, V_O = (See table III), $\lvert I_O \rvert \le 1\mu A$	51, 53	12.0		V dc
			52, 54, 55	11.0		

See footnote at end of the table.

TABLE I. Electrical performance characteristics – Continued.

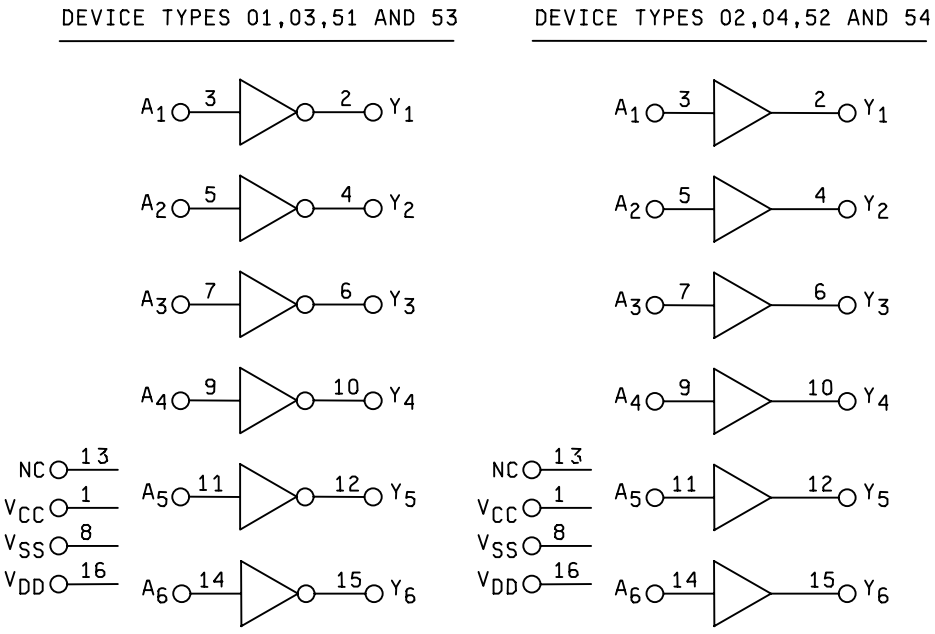
Test	Symbol	Conditions $-55°C \le T_C \le +125°C$, V_{SS} = 0 V Unless otherwise specified	Device type 1/	Limits		Unit
				Min	Max	
Input low voltage	V_{IL1}	V_{DD} and V_{CC} = 5 V dc V_O = (See table III), $\lvert I_O \rvert \le 1\mu A$	51, 53		1.0	V dc
			52, 54, 55		1.5	
	V_{IL2}	V_{DD} and V_{CC} = 10 V dc V_O = (See table III), $\lvert I_O \rvert \le 1\mu A$	51, 53		2.0	V dc
			52, 54, 55		3.0	
	V_{IL3}	V_{DD} and V_{CC} = 15 V dc V_O = (See table III), $\lvert I_O \rvert \le 1\mu A$	51, 53		2.5	V dc
			52, 54, 55		4.0	
Output low (sink) current	I_{OL1}	V_{DD} and V_{CC} = 5 V dc V_{IN} = (See table III), V_{OL} = 0.4 V dc	51-54	2.2		mA dc
		True output	55	1.2		
		Compliment output		0.55		
	I_{OL2}	V_{DD} and V_{CC} = 15 V dc V_{IN} = (See table III) V_{OL} = 1.5 V dc	51-54	17.0		mA dc
		True output	55	8.0		
		Compliment output		3.0		
Output high (source) current	I_{OH1}	V_{DD} and V_{CC} = 5 V dc V_{IN} = (See table III) V_{OH} = 4.6 V dc	51-54	-0.36		mA dc
		True output	55	-1.0		
		Compliment output		-0.4		
	I_{OH2}	V_{DD} and V_{CC} = 15 V dc V_{IN} = (See table III) V_{OH} = 13.5 V dc	51-54	-2.4		mA dc
		True output	55	-6.0		
		Compliment output		-2.7		
Input leakage current, high	I_{IH}	V_{DD} and V_{CC} = 15 V dc	01-05		100.0	nA
		V_{DD} and V_{CC} = 18 V dc	51-55		100.0	
Input leakage current, low	I_{IL}	V_{DD} and V_{CC} = 15 V dc	01-05		-100.0	nA
		V_{DD} and V_{CC} = 18 V dc	51-55		-100.0	
Input capacitance	C_i	V_{DD} and V_{CC} = 0 V dc f = 1 MHz T_C = 25°C	01, 03, 05, 51, 53, 55		20	pF
			02, 04, 52, 54		12	

See footnote end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions $-55°C \le T_C \le +125°C$, V_{SS} = 0 V Unless otherwise specified	Device type 1/	Limits		Unit
				Min	Max	
Propagation delay time, high to low level	t_{PHL}	V_{DD} and V_{CC} = 5 V dc C_L = 50 pF (See figure 3)	01, 02, 51, 52	6.0	150	ns
			03, 04, 53, 54	6.0	225	
			05, 55	6.0	172	
Propagation delay time, low to high level	t_{PLH}	V_{DD} and V_{CC} = 5 V dc C_L = 50 pF (See figure 3)	01, 02, 51, 52	6.0	210	ns
			03, 04, 53, 54	6.0	345	
			05, 55	6.0	188	
Transition time, high to low level	t_{THL}	V_{DD} and V_{CC} = 5 V dc C_L = 50 pF (See figure 3)	01, 02, 51, 52	6.0	90	ns
			03, 04 53, 54	6.0	105	
			05, 55	6.0	165	
Transition time, low to high level	t_{TLH}	V_{DD} and V_{CC} = 5 V dc C_L = 50 pF (See figure 3)	01, 02, 03, 04, 51, 52, 53, 54	6.0	405	ns
			05, 55	6.0	180	

1/ Device types 01, 02, 51, and 52 have both V_{CC} and V_{DD} terminals. Device types 03, 04, 53, and 54 have only a V_{CC} terminal. Device types 05 and 55 have only a V_{DD} terminal.



NOTE: Terminal 16 is not connected for device types 03, 04, 53, and 54.

FIGURE 1. Logic diagrams and terminal connections.

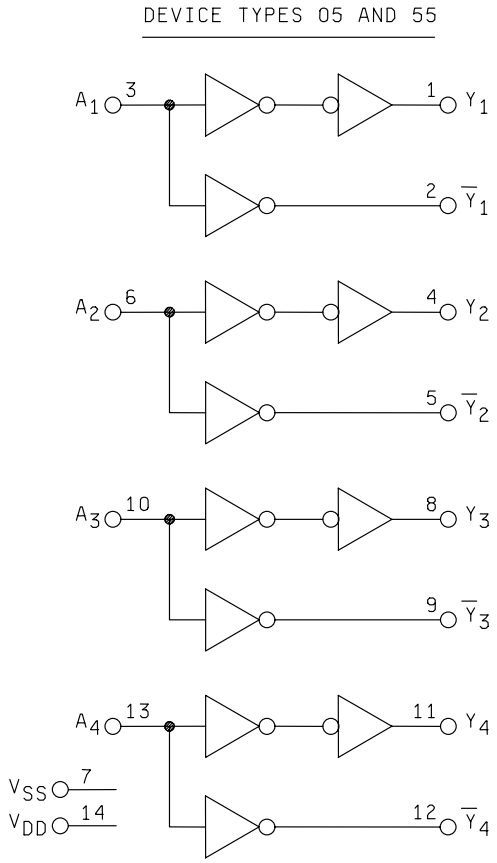


FIGURE 1. Logic diagrams and terminal connections – Continued.

Device types 01, 03, 51, and 53

Input	Output
A	Y
L	H
H	L

Positive logic: $Y = \overline{A}$

Device types 02, 04, 52, and 54

Input	Output
A	Y
L	L
H	H

Positive logic: Y = A

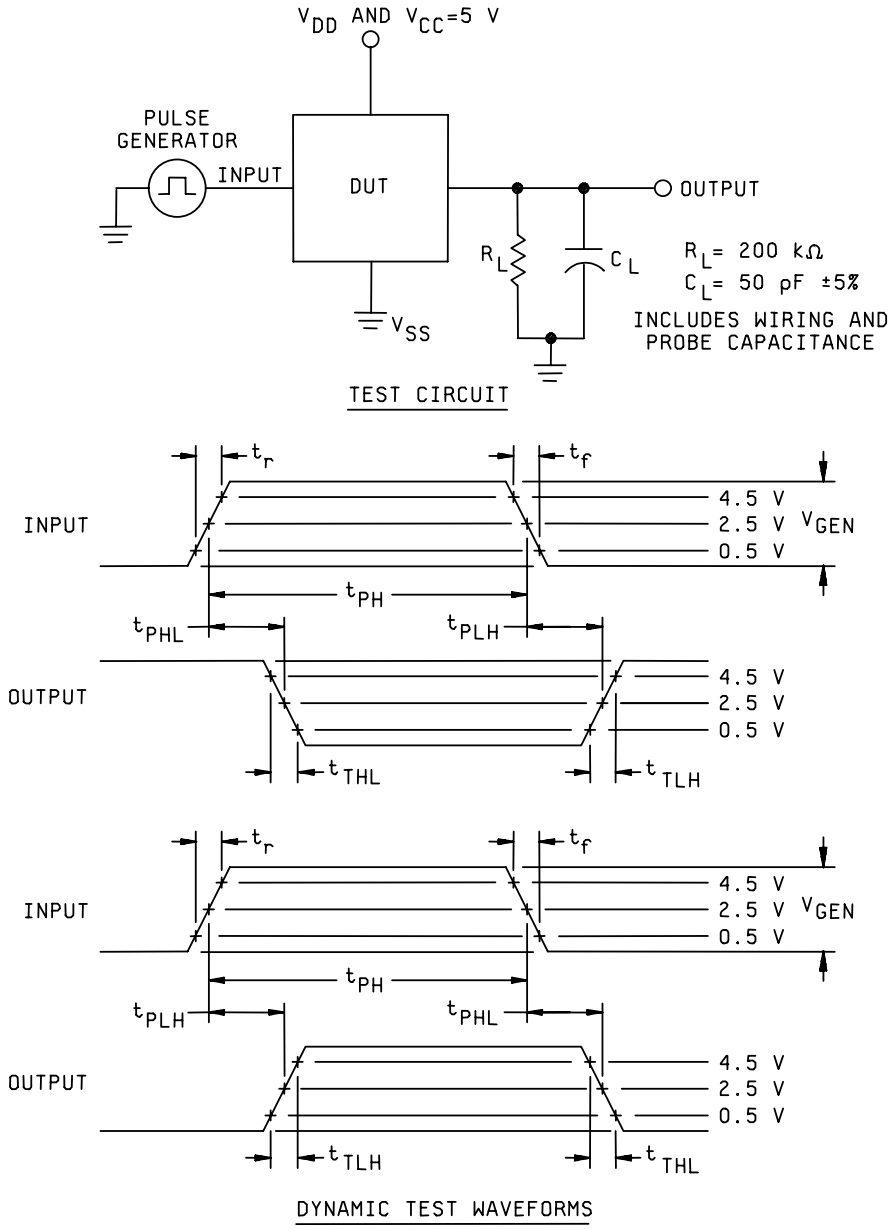
Device types 05 and 55

Input	Output	
A	Y	$\overline{Y}$
L	L	H
H	H	L

Positive logic: Y = A

H = High level voltage
L = Low level voltage

FIGURE 2. Truth tables and logic equations.



NOTES:

1. The pulse generator has the following characteristics: $V_{GEN} = V_{DD} \pm 1\%$, $t_{PH} = 1.0 \pm 0.1$ µs, $t_r = t_f = 10 \pm 2$ ns, and PRR = 200 kHz.
2. See table III for complete terminal conditions.

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, 04, and 05.
V_{DD} = 15 V minimum, 18 V maximum for device types 51, 52, 53, 54, and 55.
$V_{DD}/2 = V_{DD}/2$ ±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, 04, and 05.
V_{DD} = 15 V minimum, 18 V maximum for device types 51, 52, 53, 54, and 55.
$V_{DD}/2 = V_{DD}/2$ ±1.0 V for all devices.
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 51-55, which is manufactured identically to a 01 - 05 device type on this specification, then the 01- 05 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 of table I of method 5005 of MIL-STD-883 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 05 are qualified by extension (see 4.3.1), these device types will be inspected (QCI) according to the requirements for device types 51 through 55, 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 05 are qualified by extension (see 4.3.1), these device types will be inspected (QCI) according to the requirements for device types 51 through 55, respectively.

TABLE III. Group A inspection for device types 01 and 03.

Symbol	MIL-STD-883 method	Cases E,F,N,Z	For terminal conditions and limits, see 1/ and 2/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 3/		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	V_{CC}	Y1	A1	Y2	A2	Y3	A3	V_{SS}	A4	Y4	A5	Y5	NC	A6	Y6	V_{DD}		Min	Max	Min	Max	Min	Max	
$V_{IC(POS)}$	See 4/	1	GND		1mA		1mA		1mA		1mA		1mA			1mA		GND	A1		1.5					Vdc
"		2	"															"	A2		"					"
"		3	"															"	A3		"					"
"		4	"															"	A4		"					"
"		5	"															"	A5		"					"
"		6	"															"	A6		"					"
$V_{IC(NEG)}$		7			-1mA		-1mA		-1mA	GND	-1mA		-1mA			-1mA			A1		-6					"
"		8								"									A2		"					"
"		9								"									A3		"					"
"		10								"									A4		"					"
"		11								"									A5		"					"
"		12								"									A6		"					"
I_{SS}	3005	13	15.0V		15.0V		15.0V		15.0V	"	15.0V		15.0V			15.0V		15.0V	V_{SS}		-75		-750			nA
I_{SS}	see 5/	14	15.0V		GND		GND		GND	"	GND		GND			GND		15.0V	V_{SS}		-75		-750			nA
V_{OH1}	3006	15	4.5V	I_{OH1}	V_{IL1}	I_{OH1}	V_{IL1}	I_{OH1}	V_{IL1}	"								4.5V	Y1	2.5		2.5		2.5		Vdc
"	"	16	"							"								"	Y2	"		"		"		"
"	"	17	"							"	V_{IL1}	I_{OH1}						"	Y3	"		"		"		"
"	"	18	"							"			V_{IL1}	I_{OH1}				"	Y4	"		"		"		"
"	"	19	"							"								"	Y5	"		"		"		"
"	"	20	"							"						V_{IL1}	I_{OH1}	"	Y6	"		"		"		"
V_{OH2}	"	21	5.0V	I_{OH2}	V_{IL1}	I_{OH2}	V_{IL1}	I_{OH2}	V_{IL1}	"								5.0V	Y1	4.5		4.5		4.5		"
"	"	22	"							"	V_{IL1}	I_{OH2}						"	Y2	"		"		"		"
"	"	23	"							"			V_{IL1}	I_{OH2}				"	Y3	"		"		"		"
"	"	24	"							"								"	Y4	"		"		"		"
"	"	25	"							"								"	Y5	"		"		"		"
"	"	26	"							"						V_{IL1}	I_{OH2}	"	Y6	"		"		"		"
V_{OH3}	"	27	"		V_{IL1}		V_{IL1}		V_{IL1}	"								"	Y1	4.95		4.95		4.95		"
"	"	28	"							"	V_{IL1}							"	Y2	"		"		"		"
"	"	29	"							"			V_{IL1}					"	Y3	"		"		"		"
"	"	30	"							"								"	Y4	"		"		"		"
"	"	31	"							"								"	Y5	"		"		"		"
"	"	32	"							"						V_{IL1}		"	Y6	"		"		"		"
V_{OH4}	"	33	12.5V		V_{IL2}		V_{IL2}		V_{IL2}	"								12.5V	Y1	11.25		11.25		11.25		"
"	"	34	"							"	V_{IL2}							"	Y2	"		"		"		"
"	"	35	"							"			V_{IL2}					"	Y3	"		"		"		"
"	"	36	"							"								"	Y4	"		"		"		"
"	"	37	"							"								"	Y5	"		"		"		"
"	"	38	"							"						V_{IL2}		"	Y6	"		"		"		"
V_{OL1}	3007	39	5.5V	I_{OL1}	V_{IH1}	I_{OL1}	V_{IH1}	I_{OL1}	V_{IH1}	"								5.5V	Y1		0.5		0.5		0.5	"
"	"	40	"							"	V_{IH1}	I_{OL1}						"	Y2		"		"		"	"
"	"	41	"							"			V_{IH1}	I_{OL1}				"	Y3		"		"		"	"
"	"	42	"							"								"	Y4		"		"		"	"
"	"	43	"							"								"	Y5		"		"		"	"
"	"	44	"							"						V_{IH1}	I_{OL1}	"	Y6		"		"		"	"

See footnotes at end of device type 05.

TABLE III. Group A inspection for device types 01 and 03 – Continued.

Symbol	MIL-STD-883 method	Cases E,F,N, Z	For terminal conditions and limits, see 1/ and 2/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 3/		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	V_{CC}	Y1	A1	Y2	A2	Y3	A3	V_{SS}	A4	Y4	A5	Y5	NC	A6	Y6	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{OL2}	3007	45	5.0V	I_{OL2}	V_{IH1}	I_{OL2}	V_{IH1}	I_{OL2}	V_{IH1}	GND	V_{IH1}	I_{OL2}	V_{IH1}	I_{OL2}		V_{IH1}	I_{OL2}	5.0V	Y1		0.5		0.5		0.5	Vdc
"	"	46	"							"								"	Y2		"		"		"	"
"	"	47	"							"								"	Y3		"		"		"	"
"	"	48	"							"								"	Y4		"		"		"	"
"	"	49	"							"								"	Y5		"		"		"	"
"	"	50	"							"								"	Y6		"		"		"	"
V_{OL3}	"	51	"		V_{IH1}		V_{IH1}		V_{IH1}	"	V_{IH1}		V_{IH1}			V_{IH1}		"	Y1		0.05		0.05		0.05	"
"	"	52	"							"								"	Y2		"		"		"	"
"	"	53	"							"								"	Y3		"		"		"	"
"	"	54	"							"								"	Y4		"		"		"	"
"	"	55	"							"								"	Y5		"		"		"	"
"	"	56	"							"								"	Y6		"		"		"	"
V_{OL4}	"	57	12.5V		V_{IH2}		V_{IH2}		V_{IH2}	"	V_{IH2}		V_{IH2}			V_{IH2}		12.5V	Y1		1.25		1.25		1.25	"
"	"	58	"							"								"	Y2		"		"		"	"
"	"	59	"							"								"	Y3		"		"		"	"
"	"	60	"							"								"	Y4		"		"		"	"
"	"	61	"							"								"	Y5		"		"		"	"
"	"	62	"							"								"	Y6		"		"		"	"
I_{IH1} 6/	3010	63	15.0V		15.0V		15.0V		15.0V	"	15.0V		15.0V			15.0V		15.0V	All inputs together		600					nA
I_{IH2}	"	64	"		15.0V		GND		GND	"	GND		GND			GND		"	A1		100.0		100.0			"
"	"	65	"		GND		15.0V		GND	"	GND		"			"		"	A2		"		"			"
"	"	66	"		"		GND		15.0V	"	GND		"			"		"	A3		"		"			"
"	"	67	"		"		"		GND	"	15.0V		"			"		"	A4		"		"			"
"	"	68	"		"		"		"	"	GND		15.0V			"		"	A5		"		"			"
"	"	69	"		"		"		"	"	"		GND			15.0V		"	A6		"		"			"
I_{IL1} 6/	3009	70	"		"		"		"	"	"		"			GND		"	All inputs together		-600					"
I_{IL2}	"	71	"		"		"		"	"	"		"			"		"	A1		-100.0		-100.0			"
"	"	72	"		"		"		"	"	"		"			"		"	A2		"		"			"
"	"	73	"		"		"		"	"	"		"			"		"	A3		"		"			"
"	"	74	"		"		"		"	"	"		"			"		"	A4		"		"			"
"	"	75	"		"		"		"	"	"		"			"		"	A5		"		"			"
"	"	76	"		"		"		"	"	"		"			"		"	A6		"		"			"
																				Subgroup 4 T_C = 25°C						
																				Min	Max					
C_i	3012	77	GND		A 7/		A 7/		A 7/	GND	A 7/		A 7/			A 7/		GND	A1		20					pF
"	"	78	"							"								"	A2		"					"
"	"	79	"							"								"	A3		"					"
"	"	80	"							"								"	A4		"					"
"	"	81	"							"								"	A5		"					"
"	"	82	"							"								"	A6		"					"

See footnotes at end of device type 05.

TABLE III. Group A inspection for device types 01 and 03 – Continued.

Symbol	MIL-STD-883 method	Cases E,F,N, Z	For terminal conditions and limits, see 1/ and 2/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 3/		Subgroup 9 T_C = 25°C		Subgroup 10 T_C = 125°C		Subgroup 11 T_C = -55°C		
		Test no.	V_{CC}	Y1	A1	Y2	A2	Y3	A3	V_{SS}	A4	Y4	A5	Y5	NC	A6	Y6	V_{DD}		Min	Max 8/	Min	Max 8/	Min	Max 8/	
t_{PHL}	3003	83	5.0V	OUT	IN					GND								5.0V	A1 to Y1	6	100/	9	150/	6	100/	ns
"	Fig. 3	84	"			OUT	IN			"								"	A2 to Y2	"	150	"	225	"	150	"
"	"	85	"					OUT	IN	"								"	A3 to Y3	"	"	"	"	"	"	"
"	"	86	"							"	IN	OUT						"	A4 to Y4	"	"	"	"	"	"	"
"	"	87	"							"			IN	OUT				"	A5 to Y5	"	"	"	"	"	"	"
"	"	88	"							"						IN	OUT	"	A6 to Y6	"	"	"	"	"	"	"
t_{PLH}	"	89	"	OUT	IN					"								"	A1 to Y1	6	140/	9	210/	6	140/	"
"	"	90	"			OUT	IN			"								"	A2 to Y2	"	230	"	345	"	230	"
"	"	91	"					OUT	IN	"								"	A3 to Y3	"	"	"	"	"	"	"
"	"	92	"							"	IN	OUT						"	A4 to Y4	"	"	"	"	"	"	"
"	"	93	"							"			IN	OUT				"	A5 to Y5	"	"	"	"	"	"	"
"	"	94	"							"						IN	OUT	"	A6 to Y6	"	"	"	"	"	"	"
t_{THL}	3004	95	"	OUT	IN					"								"	Y1	6	60/70	9	90/	6	60/70	"
"	Fig. 3	96	"			OUT	IN			"								"	Y2	"	"	"	105	"	"	"
"	"	97	"					OUT	IN	"								"	Y3	"	"	"	"	"	"	"
"	"	98	"							"	IN	OUT						"	Y4	"	"	"	"	"	"	"
"	"	99	"							"			IN	OUT				"	Y5	"	"	"	"	"	"	"
"	"	100	"							"						IN	OUT	"	Y6	"	"	"	"	"	"	"
t_{TLH}	"	101	"	OUT	IN					"								"	Y1	6	270	9	405	6	270	"
"	"	102	"			OUT	IN			"								"	Y2	"	"	"	"	"	"	"
"	"	103	"					OUT	IN	"								"	Y3	"	"	"	"	"	"	"
"	"	104	"							"	IN	OUT						"	Y4	"	"	"	"	"	"	"
"	"	105	"							"			IN	OUT				"	Y5	"	"	"	"	"	"	"
"	"	106	"							"						IN	OUT	"	Y6	"	"	"	"	"	"	"

See footnotes at end of device type 05.

TABLE III. Group A inspection for device types 02 and 04.

Symbol	MIL-STD-883 method	Cases E,F,N, Z	For terminal conditions and limits, see 1/ and 2/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 3/		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	V_{CC}	Y1	A1	Y2	A2	Y3	A3	V_{SS}	A4	Y4	A5	Y5	NC	A6	Y6	V_{DD}		Min	Max	Min	Max	Min	Max	
$V_{IC(POS)}$	See 4/	1	GND		1mA		1mA		1mA		1mA		1mA			1mA		GND	A1		1.5					Vdc
"		2	"															"	A2		"					"
"		3	"															"	A3		"					"
"		4	"															"	A4		"					"
"		5	"															"	A5		"					"
"		6	"															"	A6		"					"
$V_{IC(NEG)}$		7			-1mA		-1mA		-1mA	GND	-1mA		-1mA			-1mA			A1		-6					"
"		8								"									A2		"					"
"		9								"									A3		"					"
"		10								"									A4		"					"
"		11								"									A5		"					"
"		12								"									A6		"					"
I_{SS}	3005	13	15.0V		15.0V		15.0V		15.0V	"	15.0V		15.0V			15.0V		15.0V	V_{SS}		-75		-750			nA
I_{SS}	see 5/	14	15.0V		GND		GND		GND	"	GND		GND			GND		15.0V	V_{SS}		-75		-750			nA
V_{OH1}	3006	15	4.5V	I_{OH1}	V_{IH1}	I_{OH1}	V_{IH1}	I_{OH1}	V_{IH1}	"	V_{IH1}	I_{OH1}	V_{IH1}	I_{OH1}		V_{IH1}	I_{OH1}	4.5V	Y1	2.5		2.5		2.5		Vdc
"	"	16	"							"								"	Y2	"		"		"		"
"	"	17	"							"								"	Y3	"		"		"		"
"	"	18	"							"								"	Y4	"		"		"		"
"	"	19	"							"								"	Y5	"		"		"		"
"	"	20	"							"								"	Y6	"		"		"		"
V_{OH2}	"	21	5.0V	I_{OH2}	V_{IH1}	I_{OH2}	V_{IH1}	I_{OH2}	V_{IH1}	"	V_{IH1}	I_{OH2}	V_{IH1}	I_{OH2}		V_{IH1}	I_{OH2}	5.0V	Y1	4.5		4.5		4.5		"
"	"	22	"							"								"	Y2	"		"		"		"
"	"	23	"							"								"	Y3	"		"		"		"
"	"	24	"							"								"	Y4	"		"		"		"
"	"	25	"							"								"	Y5	"		"		"		"
"	"	26	"							"								"	Y6	"		"		"		"
V_{OH3}	"	27	"		V_{IH1}		V_{IH1}		V_{IH1}	"	V_{IH1}		V_{IH1}			V_{IH1}		"	Y1	4.95		4.95		4.95		"
"	"	28	"							"								"	Y2	"		"		"		"
"	"	29	"							"								"	Y3	"		"		"		"
"	"	30	"							"								"	Y4	"		"		"		"
"	"	31	"							"								"	Y5	"		"		"		"
"	"	32	"							"								"	Y6	"		"		"		"
V_{OH4}	"	33	12.5V		V_{IH2}		V_{IH2}		V_{IH2}	"	V_{IH2}		V_{IH2}			V_{IH2}		12.5V	Y1	11.25		11.25		11.25		"
"	"	34	"							"								"	Y2	"		"		"		"
"	"	35	"							"								"	Y3	"		"		"		"
"	"	36	"							"								"	Y4	"		"		"		"
"	"	37	"							"								"	Y5	"		"		"		"
"	"	38	"							"								"	Y6	"		"		"		"
V_{OL1}	3007	39	5.5V	I_{OL1}	V_{IL1}	I_{OL1}	V_{IL1}	I_{OL1}	V_{IL1}	"	V_{IL1}	I_{OL1}	V_{IL1}	I_{OL1}		V_{IL1}	I_{OL1}	5.5V	Y1		0.5		0.5		0.5	"
"	"	40	"							"								"	Y2		"		"		"	"
"	"	41	"							"								"	Y3		"		"		"	"
"	"	42	"							"								"	Y4		"		"		"	"
"	"	43	"							"								"	Y5		"		"		"	"
"	"	44	"							"								"	Y6		"		"		"	"

See footnotes at end of device type 05.

TABLE III. Group A inspection for device types 02 and 04 – Continued.

Symbol	MIL-STD-883 method	Cases E,F,N, Z	For terminal conditions and limits, see 1/ and 2/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 3/		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	V_{CC}	Y1	A1	Y2	A2	Y3	A3	V_{SS}	A4	Y4	A5	Y5	NC	A6	Y6	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{OL2}	3007	45	5.0V	I_{OL2}	V_{IL1}					GND								5.0V	Y1		0.5		0.5		0.5	Vdc
"	"	46	"			I_{OL2}	V_{IL1}			"								"	Y2		"		"		"	"
"	"	47	"					I_{OL2}	V_{IL1}	"								"	Y3		"		"		"	"
"	"	48	"							"	V_{IL1}	I_{OL2}						"	Y4		"		"		"	"
"	"	49	"							"			V_{IL1}	I_{OL2}				"	Y5		"		"		"	"
"	"	50	"							"						V_{IL1}	I_{OL2}	"	Y6		"		"		"	"
V_{OL3}	"	51	"		V_{IL1}					"								"	Y1		0.05		0.05		0.05	"
"	"	52	"				V_{IL1}			"								"	Y2		"		"		"	"
"	"	53	"						V_{IL1}	"								"	Y3		"		"		"	"
"	"	54	"							"	V_{IL1}							"	Y4		"		"		"	"
"	"	55	"							"			V_{IL1}					"	Y5		"		"		"	"
"	"	56	"							"						V_{IL1}		"	Y6		"		"		"	"
V_{OL4}	"	57	12.5V		V_{IL2}					"								12.5V	Y1		1.25		1.25		1.25	"
"	"	58	"				V_{IL2}			"								"	Y2		"		"		"	"
"	"	59	"						V_{IL2}	"								"	Y3		"		"		"	"
"	"	60	"							"	V_{IL2}							"	Y4		"		"		"	"
"	"	61	"							"			V_{IL2}					"	Y5		"		"		"	"
"	"	62	"							"						V_{IL2}		"	Y6		"		"		"	"
I_{IH1} 6/	3010	63	15.0V		15.0V		15.0V		15.0V	"	15.0V		15.0V			15.0V		15.0V	All inputs together		600					nA
I_{IH2}	"	64	"		15.0V		GND		GND	"	GND		GND			GND		"	A1		100.0		100.0			"
"	"	65	"		GND		15.0V		GND	"	GND		"			"		"	A2		"		"			"
"	"	66	"		"		GND		15.0V	"	GND		"			"		"	A3		"		"			"
"	"	67	"		"		"		GND	"	15.0V		"			"		"	A4		"		"			"
"	"	68	"		"		"		"	"	GND		15.0V			"		"	A5		"		"			"
"	"	69	"		"		"		"	"	"		GND			15.0V		"	A6		"		"			"
I_{IL1} 6/	3009	70	"		"		"		"	"	"		"			GND		"	All inputs together		-600					"
I_{IL2}	"	71	"		"		"		"	"	"		"			"		"	A1		-100.0		-100.0			"
"	"	72	"		"		"		"	"	"		"			"		"	A2		"		"			"
"	"	73	"		"		"		"	"	"		"			"		"	A3		"		"			"
"	"	74	"		"		"		"	"	"		"			"		"	A4		"		"			"
"	"	75	"		"		"		"	"	"		"			"		"	A5		"		"			"
"	"	76	"		"		"		"	"	"		"			"		"	A6		"		"			"
																				Subgroup 4 T_C = 25°C						
																				Min	Max					
C_i	3012	77	GND		A 7/					GND								GND	A1		12					pF
"	"	78	"				A 7/			"								"	A2		"					"
"	"	79	"						A 7/	"								"	A3		"					"
"	"	80	"							"	A 7/							"	A4		"					"
"	"	81	"							"			A 7/					"	A5		"					"
"	"	82	"							"						A 7/		"	A6		"					"

See footnotes at end of device type 05.

TABLE III. Group A inspection for device types 02 and 04 – Continued.

Symbol	MIL-STD-883 method	Cases E,F,N, Z	For terminal conditions and limits, see 1/ and 2/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 3/		Subgroup 9 T_C = 25°C		Subgroup 10 T_C = 125°C		Subgroup 11 T_C = -55°C		
		Test no.	V_{CC}	Y1	A1	Y2	A2	Y3	A3	V_{SS}	A4	Y4	A5	Y5	NC	A6	Y6	V_{DD}		Min	Max 8/	Min	Max 8/	Min	Max 8/	
t_{PHL}	3003	83	5.0V	OUT	IN					GND								5.0V	A1 to Y1	6	100/	9	150/	6	100/	ns
"	Fig. 3	84	"			OUT	IN			"								"	A2 to Y2	"	150	"	225	"	150	"
"	"	85	"					OUT	IN	"								"	A3 to Y3	"	"	"	"	"	"	"
"	"	86	"							"	IN	OUT						"	A4 to Y4	"	"	"	"	"	"	"
"	"	87	"							"			IN	OUT				"	A5 to Y5	"	"	"	"	"	"	"
"	"	88	"							"						IN	OUT	"	A6 to Y6	"	"	"	"	"	"	"
t_{PLH}	"	89	"	OUT	IN					"								"	A1 to Y1	6	140/	9	210/	6	140/	"
"	"	90	"			OUT	IN			"								"	A2 to Y2	"	230	"	345	"	230	"
"	"	91	"					OUT	IN	"								"	A3 to Y3	"	"	"	"	"	"	"
"	"	92	"							"	IN	OUT						"	A4 to Y4	"	"	"	"	"	"	"
"	"	93	"							"			IN	OUT				"	A5 to Y5	"	"	"	"	"	"	"
"	"	94	"							"						IN	OUT	"	A6 to Y6	"	"	"	"	"	"	"
t_{THL}	3004	95	"	OUT	IN					"								"	Y1	6	60/70	9	90/	6	60/70	"
"	Fig. 3	96	"			OUT	IN			"								"	Y2	"	"	"	105	"	"	"
"	"	97	"					OUT	IN	"								"	Y3	"	"	"	"	"	"	"
"	"	98	"							"	IN	OUT						"	Y4	"	"	"	"	"	"	"
"	"	99	"							"			IN	OUT				"	Y5	"	"	"	"	"	"	"
"	"	100	"							"						IN	OUT	"	Y6	"	"	"	"	"	"	"
t_{TLH}	"	101	"	OUT	IN					"								"	Y1	6	270	9	405	6	270	"
"	"	102	"			OUT	IN			"								"	Y2	"	"	"	"	"	"	"
"	"	103	"					OUT	IN	"								"	Y3	"	"	"	"	"	"	"
"	"	104	"							"	IN	OUT						"	Y4	"	"	"	"	"	"	"
"	"	105	"							"			IN	OUT				"	Y5	"	"	"	"	"	"	"
"	"	106	"							"						IN	OUT	"	Y6	"	"	"	"	"	"	"

See footnotes at end of device type 05.

TABLE III. Group A inspection for device type 05.

Symbol	MIL-STD-883 method	Cases A,C,D X,Y	For terminal conditions and limits, see 1/ and 2/													Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	Y1	$\overline{Y1}$	A1	Y2	$\overline{Y2}$	A2	V_{SS}	Y3	$\overline{Y3}$	A3	Y4	$\overline{Y4}$	A4	V_{DD}		Min	Max	Min	Max	Min	Max	
$V_{IC(POS)}$		1			1mA											GND	A1		1.5					Vdc
"		2						1mA								"	A2		"					"
"		3										1mA				"	A3		"					"
"		4													1mA	"	A4		"					"
$V_{IC(NEG)}$		5			-1mA				GND								A1		-6					"
"		6						-1mA	"								A2		"					"
"		7							"			-1mA					A3		"					"
"		8							"						-1mA		A4		"					"
I_{SS}	3005	9			15.0V			15.0V	"			15.0V			15.0V	15.0V	V_{SS}		-75		-750			nA
I_{SS}	See 5/	10			GND			GND	"			GND			GND	15.0V	V_{SS}		-75		-750			nA
V_{OH1}	3006	11	I_{OH1}		V_{IH1}				"							4.5V	Y1	2.5		2.5		2.5		Vdc
"	"	12				I_{OH1}		V_{IH1}	"							"	Y2	"		"		"		"
"	"	13							"	I_{OH1}		V_{IH1}				"	Y3	"		"		"		"
"	"	14							"				I_{OH1}		V_{IH1}	"	$\underline{Y4}$	"		"		"		"
"	"	15		I_{OH1}	V_{IL1}				"							"	$\underline{Y1}$	"		"		"		"
"	"	16					I_{OH1}	V_{IL1}	"							"	$\underline{Y2}$	"		"		"		"
"	"	17							"		I_{OH1}	V_{IL1}				"	$\underline{Y3}$	"		"		"		"
"	"	18							"					I_{OH1}	V_{IL1}	"	Y4	"		"		"		"
V_{OH2}	"	19	I_{OH2}		V_{IH1}				"							5.0V	Y1	4.5		4.5		4.5		"
"	"	20				I_{OH2}		V_{IH1}	"							"	Y2	"		"		"		"
"	"	21							"	I_{OH2}		V_{IH1}				"	Y3	"		"		"		"
"	"	22							"				I_{OH2}		V_{IH1}	"	$\underline{Y4}$	"		"		"		"
"	"	23		I_{OH2}	V_{IL1}				"							"	$\underline{Y1}$	"		"		"		"
"	"	24					I_{OH2}	V_{IL1}	"							"	$\underline{Y2}$	"		"		"		"
"	"	25							"		I_{OH2}	V_{IL1}				"	$\underline{Y3}$	"		"		"		"
"	"	26							"					I_{OH2}	V_{IL1}	"	Y4	"		"		"		"
V_{OH3}	"	27			V_{IH1}				"							"	Y1	4.95		4.95		4.95		"
"	"	28						V_{IH1}	"							"	Y2	"		"		"		"
"	"	29							"			V_{IH1}				"	Y3	"		"		"		"
"	"	30							"						V_{IH1}	"	$\underline{Y4}$	"		"		"		"
"	"	31			V_{IL1}				"							"	$\underline{Y1}$	"		"		"		"
"	"	32						V_{IL1}	"							"	$\underline{Y2}$	"		"		"		"
"	"	33							"			V_{IL1}				"	$\underline{Y3}$	"		"		"		"
"	"	34							"						V_{IL1}	"	Y4	"		"		"		"
V_{OH4}	"	35			V_{IH2}				"							12.5V	Y1	11.25		11.25		11.25		"
"	"	36						V_{IH2}	"							"	Y2	"		"		"		"
"	"	37							"			V_{IH2}				"	Y3	"		"		"		"
"	"	38							"						V_{IH2}	"	$\underline{Y4}$	"		"		"		"
"	"	39			V_{IL2}				"							"	$\underline{Y1}$	"		"		"		"
"	"	40						V_{IL2}	"							"	$\underline{Y2}$	"		"		"		"
"	"	41							"			V_{IL2}				"	$\underline{Y3}$	"		"		"		"
"	"	42							"						V_{IL2}	"	Y4	"		"		"		"

See footnotes at end of device type 05.

TABLE III. Group A inspection for device type 05 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D X,Y	For terminal conditions and limits, see 1/ and 2/														Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	Y1	$\overline{Y1}$	A1	Y2	$\overline{Y2}$	A2	V_{SS}	Y3	$\overline{Y3}$	A3	Y4	$\overline{Y4}$	A4	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{OL1}	3007	43	I_{OL1}		V_{IL1}				GND							5.5V	Y1		0.5		0.5		0.5	Vdc
"	"	44				I_{OL1}		V_{IL1}	"							"	Y2		"		"		"	"
"	"	45							"	I_{OL1}		V_{IL1}				"	Y3		"		"		"	"
"	"	46							"				I_{OL1}		V_{IL1}	"	Y4		"		"		"	"
"	"	47		I_{OL1}	V_{IH1}				"							"	Y1		"		"		"	"
"	"	48					I_{OL1}	V_{IH1}	"							"	Y2		"		"		"	"
"	"	49							"		I_{OL1}	V_{IH1}				"	Y3		"		"		"	"
"	"	50							"					I_{OL1}	V_{IH1}	"	Y4		"		"		"	"
V_{OL2}	"	51	I_{OL3}		V_{IL1}				"							5.0V	Y1		0.5		0.5		0.5	"
"	"	52				I_{OL3}		V_{IL1}	"							"	Y2		"		"		"	"
"	"	53							"	I_{OL3}		V_{IL1}				"	Y3		"		"		"	"
"	"	54							"				I_{OL3}		V_{IL1}	"	Y4		"		"		"	"
"	"	55		I_{OL4}	V_{IH1}				"							"	Y1		"		"		"	"
"	"	56					I_{OL4}	V_{IH1}	"							"	Y2		"		"		"	"
"	"	57							"		I_{OL4}	V_{IH1}				"	Y3		"		"		"	"
"	"	58							"					I_{OL4}	V_{IH1}	"	Y4		"		"		"	"
V_{OL3}	"	59			V_{IL1}				"							"	Y1		0.05		0.05		0.05	"
"	"	60						V_{IL1}	"							"	Y2		"		"		"	"
"	"	61							"			V_{IL1}				"	Y3		"		"		"	"
"	"	62							"						V_{IL1}	"	Y4		"		"		"	"
"	"	63			V_{IH1}				"							"	Y1		"		"		"	"
"	"	64						V_{IH1}	"							"	Y2		"		"		"	"
"	"	65							"			V_{IH1}				"	Y3		"		"		"	"
"	"	66							"						V_{IH1}	"	Y4		"		"		"	"
V_{OL4}	"	67			V_{IL2}				"							12.5V	Y1		1.25		1.25		1.25	"
"	"	68						V_{IL2}	"							"	Y2		"		"		"	"
"	"	69							"			V_{IL2}				"	Y3		"		"		"	"
"	"	70							"						V_{IL2}	"	Y4		"		"		"	"
"	"	71			V_{IH2}				"							"	Y1		"		"		"	"
"	"	72						V_{IH2}	"							"	Y2		"		"		"	"
"	"	73							"			V_{IH2}				"	Y3		"		"		"	"
"	"	74							"						V_{IH2}	"	Y4		"		"		"	"
I_{IH1} 6/	3010	75			15.0V			15.0V	"			15.0V			15.0V	15.0V	All inputs together		400					nA
I_{IH2}	"	76			15.0V			GND	"			GND			GND	"	A1		100		100			"
"	"	77			GND			15.0V	"			GND			GND	"	A2		"		"			"
"	"	78			"			GND	"			15.0V			GND	"	A3		"		"			"
"	"	79			"			GND	"			GND			15.0V	"	A4		"		"			"
I_{IL1} 5/	3009	80			"			GND	"			GND			GND	"	All inputs together		-400					"

See footnotes at end of device type 05.

TABLE III. Group A inspection for device type 05 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D X,Y	For terminal conditions and limits, see 1/ and 2/														Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	Y1	$\overline{Y1}$	A1	Y2	$\overline{Y2}$	A2	V_{SS}	Y3	$\overline{Y3}$	A3	Y4	$\overline{Y4}$	A4	V_{DD}		Min	Max	Min	Max	Min	Max	
I_{IL2}	3009	81			GND			GND	GND			GND			GND	15.0V	A1		-100		-100			nA
"	"	82			"			"	"			"			"	"	A2		"		"			"
"	"	83			"			"	"			"			"	"	A3		"		"			"
"	"	84			"			"	"			"			"	"	A4		"		"			"
																		Subgroup 4 T_C = 25°C						
																		Min	Max					
C_i	3012	85			A 7/				GND							GND	A1		20					pF
"	"	86						A 7/	"							"	A2		"					"
"	"	87							"			A 7/				"	A3		"					"
"	"	88							"						A 7/	"	A4		"					"
																		Subgroup 9 T_C = 25°C		Subgroup 10 T_C = 125°C		Subgroup 11 T_C = -55°C		
																		Min	Max	Min	Max	Min	Max	
t_{PHL}	3003	89	OUT		IN				GND							5.0V	A1 to Y1	6	115	9	172	6	172	ns
"	Fig. 3	90				OUT		IN	"							"	A2 to Y2	"	"	"	"	"	"	"
"	"	91							"	OUT		IN				"	A3 to Y3	"	"	"	"	"	"	"
"	"	92							"				OUT		IN	"	A4 to $\overline{Y4}$	"	"	"	"	"	"	"
"	"	93		OUT	IN				"							"	A1 to $\overline{Y1}$	"	"	"	"	"	"	"
"	"	94					OUT	IN	"							"	A2 to $\overline{Y2}$	"	"	"	"	"	"	"
"	"	95							"		OUT	IN				"	A3 to $\overline{Y3}$	"	"	"	"	"	"	"
"	"	96							"					OUT	IN	"	A4 to $\overline{Y4}$	"	"	"	"	"	"	"
t_{PLH}	"	97	OUT		IN				"							"	A1 to Y1	6	125	9	188	6	188	"
"	"	98				OUT		IN	"							"	A2 to Y2	"	"	"	"	"	"	"
"	"	99							"	OUT		IN				"	A3 to Y3	"	"	"	"	"	"	"
"	"	100							"				OUT		IN	"	A4 to $\overline{Y4}$	"	"	"	"	"	"	"
"	"	101		OUT	IN				"							"	A1 to $\overline{Y1}$	"	110	"	165	"	165	"
"	"	102					OUT	IN	"							"	A2 to $\overline{Y2}$	"	"	"	"	"	"	"
"	"	103							"		OUT	IN				"	A3 to $\overline{Y3}$	"	"	"	"	"	"	"
"	"	104							"					OUT	IN	"	A4 to Y4	"	"	"	"	"	"	"
t_{THL}	3004	105	OUT		IN				"							"	Y1	6	50	9	75	6	75	"
"	Fig. 3	106				OUT		IN	"							"	Y2	"	"	"	"	"	"	"
"	"	107							"	OUT		IN				"	Y3	"	"	"	"	"	"	"
"	"	108							"				OUT		IN	"	$\overline{Y4}$	"	"	"	"	"	"	"
"	"	109		OUT	IN				"							"	$\overline{Y1}$	"	110	"	165	"	165	"
"	"	110					OUT	IN	"							"	$\overline{Y2}$	"	"	"	"	"	"	"
"	"	111							"		OUT	IN				"	$\overline{Y3}$	"	"	"	"	"	"	"
"	"	112							"					OUT	IN	"	Y4	"	"	"	"	"	"	"
t_{TLH}	"	113	OUT		IN				"							"	Y1	6	70	9	105	6	105	"
"	"	114				OUT		IN	"							"	Y2	"	"	"	"	"	"	"
"	"	115							"	OUT		IN				"	Y3	"	"	"	"	"	"	"
"	"	116							"				OUT		IN	"	Y4	"	"	"	"	"	"	"
"	"	117		OUT	IN				"							"	$\overline{Y1}$	"	120	"	180	"	180	"
"	"	118					OUT	IN	"							"	$\overline{Y2}$	"	"	"	"	"	"	"
"	"	119							"		OUT	IN				"	$\overline{Y3}$	"	"	"	"	"	"	"
"	"	120							"					OUT	IN	"	Y4	"	"	"	"	"	"	"

See footnotes on next sheet.

1/ Input pins not designated may be tied to V_{DD} (or 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.

2/

Symbol	V_{IH1}		V_{IL1}		V_{IH2}		V_{IL2}		I_{OH1}	I_{OL1}	I_{OH2}	I_{OL2}	I_{OL3}	I_{OL4}
Device type	01 03 05	02 04	01 03 05	02 04	01 03 05	02 04	01 03 05	02 04	All	All	All	All	05	05
Temperature T_C = 25°C	3.95 V	3.8 V	0.9 V	1.1 V	10.25 V	9.5 V	2.15 V	2.8 V	-.1 mA	.23 mA	-.45 mA	3.0 mA	1.6 mA	0.8 mA
T_C = 125°C	3.85 V	3.6 V	0.65 V	0.85 V	10.0 V	9.25 V	1.95 V	2.55 V	-.1 mA	.23 mA	-.35 mA	2.1 mA	1.2 mA	0.55 mA
T_C = -55°C	4.05 V	3.95 V	0.95 V	1.35 V	10.5 V	9.75 V	2.24 V	3.05 V	-.1 mA	.23 mA	-.65 mA	3.7 mA	2.1 mA	1.0 mA

3/ Terminal 16 is not connected for device types 03 and 04.

4/ Test parameter $V_{IC(pos)}$ does not apply to device types 03 and 04.

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

6/ 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.

7/ (A) Capacitance bridge between measured terminal and V_{SS}; frequency = 1 MHz.

8/ Test limits t_{PHL}, t_{PLH}, t_{THL}, and t_{TLH} for device types 01/03 and 02/04 consists of two sets of values and are expressed XXX/XXXX in the limits columns. The digits preceding the slash apply to the first device in a set.

TABLE III. Group A inspection for device types 51 and 53.

Symbol	MIL-STD-883 method	Cases E,F,N,Z	For terminal conditions and limits, see 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 2/		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	V_{CC}	Y1	A1	Y2	A2	Y3	A3	V_{SS}	A4	Y4	A5	Y5	NC	A6	Y6	V_{DD}		Min	Max	Min	Max	Min	Max	
$V_{IC(POS)}$	3/	1	GND		1mA													GND	A1		1.5					Vdc
"		2	"				1mA											"	A2		"					"
"		3	"						1mA									"	A3		"					"
"		4	"								1mA							"	A4		"					"
"		5	"										1mA					"	A5		"					"
"		6	"													1mA		"	A6		"					"
$V_{IC(NEG)}$		7			-1mA					GND									A1		-6.0					"
"		8					-1mA			"									A2		"					"
"		9							-1mA	"									A3		"					"
"		10								"	-1mA								A4		"					"
"		11								"			-1mA						A5		"					"
"		12								"						-1mA			A6		"					"
I_{SS}	3005 4/	13	18 V		18 V		18 V		18 V	"	18 V		18 V			18 V		18 V	V_{SS}		-75		-750			nAdc
I_{SS}	3005 4/	14	18 V		GND		GND		GND	"	GND		GND			GND		18 V	V_{SS}		-75		-750			nAdc
V_{OH5}	3006	15	15 V		GND					"								15 V	Y1	14.95		14.95		14.95		Vdc
"	"	16	"				GND			"								"	Y2	"		"		"		"
"	"	17	"						GND	"								"	Y3	"		"		"		"
"	"	18	"							"	GND							"	Y4	"		"		"		"
"	"	19	"							"			GND					"	Y5	"		"		"		"
"	"	20	"							"						GND		"	Y6	"		"		"		"
V_{OL5}	3007	21	15 V		15 V					"								"	Y1		0.05		0.05		0.05	"
"	"	22	"				15 V			"								"	Y2		"		"		"	"
"	"	23	"						15 V	"								"	Y3		"		"		"	"
"	"	24	"							"	15 V							"	Y4		"		"		"	"
"	"	25	"							"			15 V					"	Y5		"		"		"	"
"	"	26	"							"						15 V		"	Y6		"		"		"	"
V_{IH1}		27	5 V		4.0 V		GND		GND	"	GND		GND			GND		5 V	Y1		0.5		0.5		0.5	"
"		28	"		GND		4.0 V		GND	"	GND		"			"		"	Y2		"		"		"	"
"		29	"		"		GND		4.0 V	"	GND		"			"		"	Y3		"		"		"	"
"		30	"		"		"		GND	"	4.0 V		"			"		"	Y4		"		"		"	"
"		31	"		"		"		"	"	GND		4.0 V			"		"	Y5		"		"		"	"
"		32	"		"		"		"	"	"		GND			4.0 V		"	Y6		"		"		"	"
V_{IH2}		33	10 V		8.0 V		"		"	"	"		"			GND		10 V	Y1		1.0		1.0		1.0	"
"		34	"		GND		8.0 V		"	"	"		"			"		"	Y2		"		"		"	"
"		35	"		"		GND		8.0 V	"	"		"			"		"	Y3		"		"		"	"
"		36	"		"		"		GND	"	8.0 V		"			"		"	Y4		"		"		"	"
"		37	"		"		"		"	"	GND		8.0 V			"		"	Y5		"		"		"	"
"		38	"		"		"		"	"	"		GND			8.0 V		"	Y6		"		"		"	"
V_{IH3}		39	15 V		12.5 V		"		"	"	"		"			GND		15 V	Y1		1.5		1.5		1.5	"
"		40	"		GND		12.5 V		"	"	"		"			"		"	Y2		"		"		"	"
"		41	"		"		GND		12.5 V	"	"		"			"		"	Y3		"		"		"	"
"		42	"		"		"		GND	"	12.5 V		"			"		"	Y4		"		"		"	"
"		43	"		"		"		GND	"	GND		12.5 V			"		"	Y5		"		"		"	"
"		44	"		"		"		GND	"	GND		GND			12.5 V		"	Y6		"		"		"	"

See footnotes at end of device type 55.

TABLE III. Group A inspection for device types 51 and 53 – Continued.

Symbol	MIL-STD-883 method	Cases E,F,N,Z	For terminal conditions and limits, see 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 2/		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	V_{CC}	Y1	A1	Y2	A2	Y3	A3	V_{SS}	A4	Y4	A5	Y5	NC	A6	Y6	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IL1}		45	5 V		1.0 V		GND		GND	GND	GND		GND			GND		5 V	Y1	4.5		4.5		4.5		Vdc
		46	"		GND		1.0 V		GND	"	"		"			"		"	Y2	"		"		"		"
		47	"		"		GND		1.0 V	"	"		"			"		"	Y3	"		"		"		"
		48	"		"		"		GND	"	1.0 V		"			"		"	Y4	"		"		"		"
		49	"		"		"		"	"	GND		1.0 V			"		"	Y5	"		"		"		"
		50	"		"		"		"	"	"		GND			1.0 V		"	Y6	"		"		"		"
V_{IL2}		51	10 V		2.0 V		"		"	"	"		"			GND		10 V	Y1	9.0		9.0		9.0		"
		52	"		GND		2.0 V		"	"	"		"			"		"	Y2	"		"		"		"
		53	"		"		GND		2.0 V	"	"		"			"		"	Y3	"		"		"		"
		54	"		"		"		GND	"	2.0 V		"			"		"	Y4	"		"		"		"
		55	"		"		"		"	"	GND		2.0 V			"		"	Y5	"		"		"		"
		56	"		"		"		"	"	"		GND			2.0 V		"	Y6	"		"		"		"
V_{IL3}		57	15 V		2.5 V		"		"	"	"		"			GND		15 V	Y1	13.5		13.5		13.5		"
		58	"		GND		2.5 V		"	"	"		"			"		"	Y2	"		"		"		"
		59	"		"		GND		2.5 V	"	"		"			"		"	Y3	"		"		"		"
		60	"		"		"		GND	"	2.5 V		"			"		"	Y4	"		"		"		"
		61	"		"		"		"	"	GND		2.5 V			"		"	Y5	"		"		"		"
		62	"		"		"		"	"	"		GND			2.5 V		"	Y6	"		"		"		"
I_{OL1}		63	5 V	0.4 V	5 V		"		"	"	"		"			GND		5 V	Y1	3.2		2.2		4.0		mA
		64	"		GND	0.4 V	5 V		"	"	"		"			"		"	Y2	"		"		"		"
		65	"		"		GND	0.4 V	5 V	"	"		"			"		"	Y3	"		"		"		"
		66	"		"		"		GND	"	5 V	0.4 V	"			"		"	Y4	"		"		"		"
		67	"		"		"		"	"	GND		5 V	0.4 V		"		"	Y5	"		"		"		"
		68	"		"		"		"	"	"		GND			5 V	0.4 V	"	Y6	"		"		"		"
I_{OL2}		69	15 V	1.5 V	15 V		"		"	"	"		"			GND		15 V	Y1	24.0		17.0		30.0		"
		70	"		GND	1.5 V	15 V		"	"	"		"			"		"	Y2	"		"		"		"
		71	"		"		GND	1.5 V	15 V	"	"		"			"		"	Y3	"		"		"		"
		72	"		"		"		GND	"	15 V	1.5 V	"			"		"	Y4	"		"		"		"
		73	"		"		"		"	"	GND		15 V	1.5 V		"		"	Y5	"		"		"		"
		74	"		"		"		"	"	"		GND			15 V	1.5 V	"	Y6	"		"		"		"
I_{OH1}		75	5 V	4.6 V	"		"		"	"	"		"			GND		5 V	Y1	-0.51		-0.36		-0.64		"
		76	"		"	4.6 V	"		"	"	"		"			"		"	Y2	"		"		"		"
		77	"		"		"	4.6 V	"	"	"		"			"		"	Y3	"		"		"		"
		78	"		"		"		"	"	"	4.6 V	"			"		"	Y4	"		"		"		"
		79	"		"		"		"	"	"		"	4.6 V		"		"	Y5	"		"		"		"
		80	"		"		"		"	"	"		"			"	4.6 V	"	Y6	"		"		"		"
I_{OH2}		81	15 V	13.5 V	"		"		"	"	"		"			"		15 V	Y1	-3.4		-2.4		-4.2		"
		82	"		"	13.5 V	"		"	"	"		"			"		"	Y2	"		"		"		"
		83	"		"		"	13.5 V	"	"	"		"			"		"	Y3	"		"		"		"
		84	"		"		"		"	"	"	13.5 V	"			"		"	Y4	"		"		"		"
		85	"		"		"		"	"	"		"	13.5 V		"		"	Y5	"		"		"		"
		86	"		"		"		"	"	"		"			"	13.5 V	"	Y6	"		"		"		"
I_{IH1} 5/	3010	87	18 V		18 V		18 V		18 V	"	18 V		18 V			18 V		18 V	All inputs together		600					nA

See footnotes at end of device type 55.

TABLE III. Group A inspection for device types 51 and 53 – Continued.

Symbol	MIL-STD-883 method	Cases E,F,N,Z	For terminal conditions and limits, see 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 2/		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	V_{CC}	Y1	A1	Y2	A2	Y3	A3	V_{SS}	A4	Y4	A5	Y5	NC	A6	Y6	V_{DD}		Min	Max	Min	Max	Min	Max	
I_{IH2}	3010	88	18 V		18 V		GND		GND	GND	GND		GND			GND		18 V	A1		100.0		100.0			nA
"	"	89	"		GND		18 V		GND	"	"		"			"		"	A2		"		"			"
"	"	90	"		"		GND		18 V	"	"		"			"		"	A3		"		"			"
"	"	91	"		"		"		GND	"	18 V		"			"		"	A4		"		"			"
"	"	92	"		"		"		"	"	GND		18 V			"		"	A5		"		"			"
"	"	93	"		"		"		"	"	GND		GND			18 V		"	A6		"		"			"
I_{IL1} 5/	3009	94	"		"		"		"	"	GND		GND			GND		"	All inputs together		-600					"
I_{IL2}	"	95	"		"		18 V		18 V	"	18 V		18 V			18 V		"	A1		-100.0		-100.0			"
"	"	96	"		18 V		GND		18 V	"	18 V		"			"		"	A2		"		"			"
"	"	97	"		"		18 V		GND	"	18 V		"			"		"	A3		"		"			"
"	"	98	"		"		"		18 V	"	GND		"			"		"	A4		"		"			"
"	"	99	"		"		"		"	"	18 V		GND			"		"	A5		"		"			"
"	"	100	"		"		"		"	"	18 V		18 V			GND		"	A6		"		"			"
																				Subgroup 4 T_C = 25°C						
																				Min	Max					
C_i	3012	101	GND		A 6/					GND								GND	A1		20					pF
"	"	102	"				A 6/			"								"	A2		"					"
"	"	103	"						A 6/	"								"	A3		"					"
"	"	104	"							"	A 6/							"	A4		"					"
"	"	105	"							"			A 6/					"	A5		"					"
"	"	106	"							"						A 6/		"	A6		"					"

See footnotes at end of device type 55.

TABLE III. Group A inspection for device types 51 and 53 – Continued.

Symbol	MIL-STD-883 method	Cases E,F,N, Z	For terminal conditions and limits, see 1/															Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 2/		Subgroup 9 T_C = 25°C		Subgroup 10 T_C = 125°C		Subgroup 11 T_C = -55°C		
		Test no.	V_{CC}	Y1	A1	Y2	A2	Y3	A3	V_{SS}	A4	Y4	A5	Y5	NC	A6	Y6	V_{DD}		Min	Max 7/	Min	Max 7/	Min	Max 7/	
t_{PHL}	3003	107	5.0 V	OUT	IN					GND								5.0 V	A1 to Y1	6	60/65	9	150/	6	60/65	ns
"	Fig. 3	108	"			OUT	IN			"								"	A2 to Y2	"	"	"	225	"	"	"
"	"	109	"					OUT	IN	"								"	A3 to Y3	"	"	"	"	"	"	"
"	"	110	"							"	IN	OUT						"	A4 to Y4	"	"	"	"	"	"	"
"	"	111	"							"			IN	OUT				"	A5 to Y5	"	"	"	"	"	"	"
"	"	112	"							"						IN	OUT	"	A6 to Y6	"	"	"	"	"	"	"
t_{PLH}	"	113	"	OUT	IN					"								"	A1 to Y1	6	140/	9	210/	6	140/	"
"	"	114	"			OUT	IN			"								"	A2 to Y2	"	120	"	345	"	120	"
"	"	115	"					OUT	IN	"								"	A3 to Y3	"	"	"	"	"	"	"
"	"	116	"							"	IN	OUT						"	A4 to Y4	"	"	"	"	"	"	"
"	"	117	"							"			IN	OUT				"	A5 to Y5	"	"	"	"	"	"	"
"	"	118	"							"						IN	OUT	"	A6 to Y6	"	"	"	"	"	"	"
t_{THL}	3004	119	"	OUT	IN					"								"	Y1	6	70/60	9	90/	6	70/	"
"	Fig. 3	120	"			OUT	IN			"								"	Y2	"	"	"	105	"	60	"
"	"	121	"					OUT	IN	"								"	Y3	"	"	"	"	"	"	"
"	"	122	"							"	IN	OUT						"	Y4	"	"	"	"	"	"	"
"	"	123	"							"			IN	OUT				"	Y5	"	"	"	"	"	"	"
"	"	124	"							"						IN	OUT	"	Y6	"	"	"	"	"	"	"
t_{TLH}	"	125	"	OUT	IN					"								"	Y1	6	350/	9	405	6	350/	"
"	"	126	"			OUT	IN			"								"	Y2	"	160	"	"	"	160	"
"	"	127	"					OUT	IN	"								"	Y3	"	"	"	"	"	"	"
"	"	128	"							"	IN	OUT						"	Y4	"	"	"	"	"	"	"
"	"	129	"							"			IN	OUT				"	Y5	"	"	"	"	"	"	"
"	"	130	"							"						IN	OUT	"	Y6	"	"	"	"	"	"	"

See footnotes at end of device type 55.

TABLE III. Group A inspection for device types 52 and 54.

Symbol	MIL-STD-883 method	Cases E,F,N, Z	For terminal conditions and limits, see 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 2/		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	V_{CC}	Y1	A1	Y2	A2	Y3	A3	V_{SS}	A4	Y4	A5	Y5	NC	A6	Y6	V_{DD}		Min	Max	Min	Max	Min	Max	
$V_{IC(POS)}$	3/	1	GND		1mA		1mA		1mA		1mA		1mA			1mA		GND	A1		1.5					Vdc
"		2	"															"	A2		"					"
"		3	"															"	A3		"					"
"		4	"															"	A4		"					"
"		5	"															"	A5		"					"
"		6	"															"	A6		"					"
$V_{IC(NEG)}$		7			-1mA		-1mA		-1mA	GND	-1mA		-1mA			-1mA			A1		-6.0					"
"		8								"									A2		"					"
"		9								"									A3		"					"
"		10								"									A4		"					"
"		11								"									A5		"					"
"		12								"									A6		"					"
I_{SS}	3005 4/	13	18 V		18 V		18 V		18 V	"	18 V		18 V			18 V		18 V	V_{SS}		-75		-750			nAdc
I_{SS}	3005 4/	14	18 V		GND		GND		GND	"	GND		GND			GND		18 V	V_{SS}		-75		-750			nAdc
V_{OH5}	3006	15	15 V		15 V		15 V		15 V	"	15 V		15 V			15 V		15 V	Y1	14.95		14.95		14.95		Vdc
"	"	16	"							"								"	Y2	"		"		"		"
"	"	17	"							"								"	Y3	"		"		"		"
"	"	18	"							"								"	Y4	"		"		"		"
"	"	19	"							"								"	Y5	"		"		"		"
"	"	20	"							"								"	Y6	"		"		"		"
V_{OL5}	3007	21	15 V		GND		GND		GND	"	GND		GND				GND	"	Y1		0.05		0.05		0.05	"
"	"	22	"							"								"	Y2		"		"		"	"
"	"	23	"							"								"	Y3		"		"		"	"
"	"	24	"							"								"	Y4		"		"		"	"
"	"	25	"							"								"	Y5		"		"		"	"
"	"	26	"							"								"	Y6		"		"		"	"
V_{IH1}		27	5 V		3.5 V		GND		GND	"	GND		GND			GND		5 V	Y1	4.5		4.5		4.5		"
"		28	"		GND		3.5 V		GND	"	GND		"			"		"	Y2	"		"		"		"
"		29	"		"		GND		3.5 V	"	GND		"			"		"	Y3	"		"		"		"
"		30	"		"		"		GND	"	3.5 V		"			"		"	Y4	"		"		"		"
"		31	"		"		"		"	"	GND		3.5 V			"		"	Y5	"		"		"		"
"		32	"		"		"		"	"	"		GND			3.5 V		"	Y6	"		"		"		"
V_{IH2}		33	10 V		7 V		"		"	"	"		"			GND		10 V	Y1	9.0		9.0		9.0		"
"		34	"		GND		7 V		"	"	"		"			"		"	Y2	"		"		"		"
"		35	"		"		GND		7 V	"	"		"			"		"	Y3	"		"		"		"
"		36	"		"		"		GND	"	7 V		"			"		"	Y4	"		"		"		"
"		37	"		"		"		"	"	GND		7 V			"		"	Y5	"		"		"		"
"		38	"		"		"		"	"	"		GND			7 V		"	Y6	"		"		"		"
V_{IH3}		39	15 V		11 V		GND		"	"	"		"			GND		15 V	Y1	13.5		13.5		13.5		"
"		40	"		GND		11 V		"	"	"		"			"		"	Y2	"		"		"		"
"		41	"		"		GND		11 V	"	"		"			"		"	Y3	"		"		"		"
"		42	"		"		"		GND	"	11 V		"			"		"	Y4	"		"		"		"
"		43	"		"		"		GND	"	GND		11 V			"		"	Y5	"		"		"		"
"		44	"		"		"		GND	"	GND		GND			11 V		"	Y6	"		"		"		"

See footnotes at the end of device type 55.

TABLE III. Group A inspection for device types 52 and 54 – Continued.

Symbol	MIL-STD-883 method	Cases E,F,N,Z	For terminal conditions and limits, see 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 2/		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	V_{CC}	Y1	A1	Y2	A2	Y3	A3	V_{SS}	A4	Y4	A5	Y5	NC	A6	Y6	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IL1}		45	5.0 V		1.5 V		GND		GND	GND	GND		GND			GND		5 V	Y1		0.5		0.5		0.5	Vdc
"		46	"		GND		1.5 V		GND	"	GND		"			"		"	Y2		"		"		"	"
"		47	"		"		GND		1.5 V	"	GND		"			"		"	Y3		"		"		"	"
"		48	"		"		"		GND	"	1.5 V		"			"		"	Y4		"		"		"	"
"		49	"		"		"		"	"	GND		1.5 V			"		"	Y5		"		"		"	"
"		50	"		"		"		"	"	"		GND			1.5 V		"	Y6		"		"		"	"
V_{IL2}		51	10 V		3 V		"		"	"	"		"			GND		10 V	Y1		1.0		1.0		1.0	"
"		52	"		GND		3 V		"	"	"		"			"		"	Y2		"		"		"	"
"		53	"		"		GND		3 V	"	"		"			"		"	Y3		"		"		"	"
"		54	"		"		"		GND	"	"		"			"		"	Y4		"		"		"	"
"		55	"		"		"		"	"	3 V		"			"		"	Y5		"		"		"	"
"		56	"		"		"		"	"	GND		3 V			3 V		"	Y6		"		"		"	"
V_{IL3}		57	15 V		4 V		"		"	"	"		"			GND		15 V	Y1		1.5		1.5		1.5	"
"		58	"		GND		4 V		"	"	"		"			"		"	Y2		"		"		"	"
"		59	"		"		GND		4 V	"	"		"			"		"	Y3		"		"		"	"
"		60	"		"		"		GND	"	4 V		"			"		"	Y4		"		"		"	"
"		61	"		"		"		"	"	GND		4 V			"		"	Y5		"		"		"	"
"		62	"		"		"		"	"	"		GND			4 V		"	Y6		"		"		"	"
I_{OL1}		63	5 V	0.4 V	"		"		"	"	"		"			GND		5 V	Y1	3.2		2.2		4.0		mA
"		64	"		"	0.4 V	"		"	"	"		"			"		"	Y2	"		"		"		"
"		65	"		"		"	0.4 V	"	"	"		"			"		"	Y3	"		"		"		"
"		66	"		"		"		"	"	"	0.4 V	"			"		"	Y4	"		"		"		"
"		67	"		"		"		"	"	"		"	0.4 V		"		"	Y5	"		"		"		"
"		68	"		"		"		"	"	"		"			"	0.4 V	"	Y6	"		"		"		"
I_{OL2}		69	15 V	1.5 V	"		"		"	"	"		"			"		15 V	Y1	24.0		17.0		30.0		"
"		70	"		"	1.5 V	"		"	"	"		"			"		"	Y2	"		"		"		"
"		71	"		"		"	1.5 V	"	"	"		"			"		"	Y3	"		"		"		"
"		72	"		"		"		"	"	"	1.5 V	"			"		"	Y4	"		"		"		"
"		73	"		"		"		"	"	"		"	1.5 V		"		"	Y5	"		"		"		"
"		74	"		"		"		"	"	"		"			"	1.5 V	"	Y6	"		"		"		"
I_{OH1}		75	5.0 V	4.6 V	5.0 V		"		"	"	"		"			"		5.0 V	Y1	-0.51		-0.36		-0.64		"
"		76	"		GND	4.6 V	5.0 V		"	"	"		"			"		"	Y2	"		"		"		"
"		77	"		"		GND	4.6 V	5.0 V	"	"		"			"		"	Y3	"		"		"		"
"		78	"		"		"		GND	"	5.0 V	4.6 V	"			"		"	Y4	"		"		"		"
"		79	"		"		"		"	"	GND		5 V	4.6 V		"		"	Y5	"		"		"		"
"		80	"		"		"		"	"	"		GND			5 V	4.6 V	"	Y6	"		"		"		"
I_{OH2}		81	15 V	13.5 V	15 V		"		"	"	"		"			GND		15 V	Y1	-3.4		-2.4		-4.2		"
"		82	"		GND	13.5 V	15 V		"	"	"		"			"		"	Y2	"		"		"		"
"		83	"		"		GND	13.5 V	15 V	"	"		"			"		"	Y3	"		"		"		"
"		84	"		"		"		GND	"	15 V	13.5 V	"			"		"	Y4	"		"		"		"
"		85	"		"		"		GND	"	GND		15 V	13.5 V		"		"	Y5	"		"		"		"
"		86	"		"		"		GND	"	GND		GND			15 V	13.5 V	"	Y6	"		"		"		"
I_{IH1} 5/	3010	87	18 V		18 V		18 V		18 V	"	18 V		18 V			18 V		18 V	All inputs together		600					nA

See footnotes at end of device type 55.

TABLE III. Group A inspection for device types 52 and 54 – Continued.

Symbol	MIL-STD-883 method	Cases E,F,N,Z	For terminal conditions and limits, see 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 2/		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	V_{CC}	Y1	A1	Y2	A2	Y3	A3	V_{SS}	A4	Y4	A5	Y5	NC	A6	Y6	V_{DD}		Min	Max	Min	Max	Min	Max	
I_{IH2}	3010	88	18 V		18 V		GND		GND	GND	GND		GND			GND		18 V	A1		100.0		100.0			nA
"	"	89	"		GND		18 V		GND	"	GND		"			"		"	A2		"		"			"
"	"	90	"		"		GND		18 V	"	GND		"			"		"	A3		"		"			"
"	"	91	"		"		"		GND	"	18 V		"			"		"	A4		"		"			"
"	"	92	"		"		"		"	"	GND		18 V			"		"	A5		"		"			"
"	"	93	"		"		"		"	"	GND		GND			18 V		"	A6		"		"			"
I_{IL1} 5/	3009	94	"		"		"		"	"	GND		GND			GND		"	All inputs together		-600					"
I_{IL2}	"	95	"		"		18 V		18 V	"	18 V		18 V			18 V		"	A1		-100.0		-100.0			"
"	"	96	"		18 V		GND		18 V	"	18 V		"			"		"	A2		"		"			"
"	"	97	"		"		18 V		GND	"	18 V		"			"		"	A3		"		"			"
"	"	98	"		"		"		18 V	"	GND		"			"		"	A4		"		"			"
"	"	99	"		"		"		"	"	18 V		GND			"		"	A5		"		"			"
"	"	100	"		"		"		"	"	18 V		18 V			GND		"	A6		"		"			"
																				Subgroup 4 T_C = 25°C						
																				Min	Max					
C_i	3012	101	GND		A 6/					GND								GND	A1		12					pF
"	"	102	"				A 6/			"								"	A2		"					"
"	"	103	"						A 6/	"								"	A3		"					"
"	"	104	"							"	A 6/							"	A4		"					"
"	"	105	"							"			A 6/					"	A5		"					"
"	"	106	"							"						A 6/		"	A6		"					"

See footnotes at end of device type 55.

TABLE III. Group A inspection for device types 52 and 54 – Continued.

Symbol	MIL-STD-883 method	Cases E,F,N, Z	For terminal conditions and limits, see 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16 2/		Subgroup 9 T_C = 25°C		Subgroup 10 T_C = 125°C		Subgroup 11 T_C = -55°C		
		Test no.	V_{CC}	Y1	A1	Y2	A2	Y3	A3	V_{SS}	A4	Y4	A5	Y5	NC	A6	Y6	V_{DD}		Min	Max 7/	Min	Max 7/	Min	Max 7/	
t_{PHL}	3003 Fig. 3	107	5.0 V	OUT	IN					GND								5.0 V	A1 to Y1	6	60/65	9	150/	6	60/65	ns
"	"	108	"			OUT	IN			"								"	A2 to Y2	"	"	"	225	"	"	"
"	"	109	"					OUT	IN	"								"	A3 to Y3	"	"	"	"	"	"	"
"	"	110	"							"	IN	OUT						"	A4 to Y4	"	"	"	"	"	"	"
"	"	111	"							"			IN	OUT				"	A5 to Y5	"	"	"	"	"	"	"
"	"	112	"							"						IN	OUT	"	A6 to Y6	"	"	"	"	"	"	"
t_{PLH}	"	113	"	OUT	IN					"								"	A1 to Y1	6	140/	9	210/	6	140/	"
"	"	114	"			OUT	IN			"								"	A2 to Y2	"	120	"	345	"	120	"
"	"	115	"					OUT	IN	"								"	A3 to Y3	"	"	"	"	"	"	"
"	"	116	"							"	IN	OUT						"	A4 to Y4	"	"	"	"	"	"	"
"	"	117	"							"			IN	OUT				"	A5 to Y5	"	"	"	"	"	"	"
"	"	118	"							"						IN	OUT	"	A6 to Y6	"	"	"	"	"	"	"
t_{THL}	3004 Fig. 3	119	"	OUT	IN					"								"	Y1	6	70/60	9	90/	6	70/60	"
"	"	120	"			OUT	IN			"								"	Y2	"	"	"	105	"	"	"
"	"	121	"					OUT	IN	"								"	Y3	"	"	"	"	"	"	"
"	"	122	"							"	IN	OUT						"	Y4	"	"	"	"	"	"	"
"	"	123	"							"			IN	OUT				"	Y5	"	"	"	"	"	"	"
"	"	124	"							"						IN	OUT	"	Y6	"	"	"	"	"	"	"
t_{TLH}	"	125	"	OUT	IN					"								"	Y1	6	350/	9	405	6	350/	"
"	"	126	"			OUT	IN			"								"	Y2	"	160	"	"	"	160	"
"	"	127	"					OUT	IN	"								"	Y3	"	"	"	"	"	"	"
"	"	128	"							"	IN	OUT						"	Y4	"	"	"	"	"	"	"
"	"	129	"							"			IN	OUT				"	Y5	"	"	"	"	"	"	"
"	"	130	"							"						IN	OUT	"	Y6	"	"	"	"	"	"	"

See footnotes at end of device type 55.

TABLE III. Group A inspection for device type 55.

Symbol	MIL-STD-883 method	Cases A,C,D, T,X,Y	For terminal conditions and limits, see 1/														Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	Y1	$\overline{Y1}$	A1	Y2	$\overline{Y2}$	A2	V_{SS}	Y3	$\overline{Y3}$	A3	Y4	$\overline{Y4}$	A4	V_{DD}		Min	Max	Min	Max	Min	Max	
$V_{IC(POS)}$		1			1mA											GND	A1		1.5					Vdc
"		2						1mA								"	A2		"					"
"		3										1mA				"	A3		"					"
"		4													1mA	"	A4		"					"
$V_{IC(NEG)}$		5			-1mA				GND								A1		-6.0					"
"		6						-1mA	"								A2		"					"
"		7							"			-1mA					A3		"					"
"		8							"						-1mA		A4		"					"
I_{SS}	3005 4/	9			15 V			15 V	"			15 V			15 V	15 V	V_{SS}		-75		-750			nA
I_{SS}	3005 4/	10			GND			GND	"			GND			GND	"	V_{SS}		-75		-750			nA
V_{OH5}	3006	11			15 V				"							"	Y1	14.95		14.95		14.95		Vdc
"	"	12						15 V	"							"	Y2	"		"		"		"
"	"	13							"			15 V				"	Y3	"		"		"		"
"	"	14							"						15 V	"	$\underline{Y4}$	"		"		"		"
"	"	15			GND				"							"	$\underline{Y1}$	"		"		"		"
"	"	16						GND	"							"	$\underline{Y2}$	"		"		"		"
"	"	17							"			GND				"	$\underline{Y3}$	"		"		"		"
"	"	18							"						GND	"	Y4	"		"		"		"
V_{OL5}	3007	19			GND				"							"	Y1		0.05		0.05		0.05	"
"	"	20						GND	"							"	Y2		"		"		"	"
"	"	21							"			GND				"	Y3		"		"		"	"
"	"	22							"						GND	"	$\underline{Y4}$		"		"		"	"
"	"	23			15 V				"							"	$\underline{Y1}$		"		"		"	"
"	"	24						15 V	"							"	$\underline{Y2}$		"		"		"	"
"	"	25							"			15 V				"	$\underline{Y3}$		"		"		"	"
"	"	26							"						15 V	"	Y4		"		"		"	"
V_{IH1}		27			3.5 V			GND	"			GND			GND	5 V	Y1	4.5		4.5		4.5		"
"		28			GND			3.5 V	"			GND			GND	"	Y2	"		"		"		"
"		29			GND			GND	"			3.5 V			GND	"	Y3	"		"		"		"
"		30			GND			GND	"			GND			3.5 V	"	$\underline{Y4}$	"		"		"		"
"		31			3.5 V			GND	"			GND			GND	"	$\underline{Y1}$		0.5		0.5		0.5	"
"		32			GND			3.5 V	"			GND			GND	"	$\underline{Y2}$		"		"		"	"
"		33			GND			GND	"			3.5 V			GND	"	$\underline{Y3}$		"		"		"	"
"		34			GND			GND	"			GND			3.5 V	"	Y4		"		"		"	"
V_{IH2}		35			7 V			GND	"			GND			GND	10 V	Y1	9.0		9.0		9.0		"
"		36			GND			7 V	"			GND			GND	"	Y2	"		"		"		"
"		37			GND			GND	"			7 V			GND	"	Y3	"		"		"		"
"		38			GND			GND	"			GND			7 V	"	$\underline{Y4}$	"		"		"		"
"		39			7 V			GND	"			GND			GND	"	$\underline{Y1}$		1.0		1.0		1.0	"
"		40			GND			7 V	"			GND			GND	"	$\underline{Y2}$		"		"		"	"
"		41			GND			GND	"			7 V			GND	"	$\underline{Y3}$		"		"		"	"
"		42			GND			GND	"			GND			7 V	"	$\underline{Y4}$		"		"		"	"

See footnotes at end of device type 55.

TABLE III. Group A inspection for device type 55 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D, T,X,Y	For terminal conditions and limits, see 1/														Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	Y1	$\overline{Y1}$	A1	Y2	$\overline{Y2}$	A2	V_{SS}	Y3	$\overline{Y3}$	A3	Y4	$\overline{Y4}$	A4	V_{DD}		Min	Max	Min	Max	Min	Max	
V_{IH3}		43			11 V			GND	GND			GND			GND	15 V	Y1	13.5		13.5		13.5		Vdc
"		44			GND			11 V	"			GND			GND	"	Y2	"		"		"		"
"		45			GND			GND	"			11 V			GND	"	Y3	"		"		"		"
"		46			GND			GND	"			GND			11 V	"	Y4	"		"		"		"
"		47			11 V			GND	"			GND			GND	"	Y1		1.5		1.5		1.5	"
"		48			GND			11 V	"			GND			GND	"	Y2		"		"		"	"
"		49			GND			GND	"			11 V			GND	"	Y3		"		"		"	"
"		50			GND			GND	"			GND			11 V	"	Y4		"		"		"	"
V_{IL1}		51			1.5 V			GND	"			GND			GND	5 V	Y1		0.5		0.5		0.5	"
"		52			GND			1.5 V	"			GND			GND	"	Y2		"		"		"	"
"		53			GND			GND	"			1.5 V			GND	"	Y3		"		"		"	"
"		54			GND			GND	"			GND			1.5 V	"	Y4		"		"		"	"
"		55			1.5 V			GND	"			GND			GND	"	Y1	4.5		4.5		4.5		"
"		56			GND			1.5 V	"			GND			GND	"	Y2	"		"		"		"
"		57			GND			GND	"			1.5 V			GND	"	Y3	"		"		"		"
"		58			GND			GND	"			GND			1.5 V	"	Y4	"		"		"		"
V_{IL2}		59			3 V			GND	"			GND			GND	10 V	Y1		1.0		1.0		1.0	"
"		60			GND			3 V	"			GND			GND	"	Y2		"		"		"	"
"		61			GND			GND	"			3 V			GND	"	Y3		"		"		"	"
"		62			GND			GND	"			GND			3 V	"	Y4		"		"		"	"
"		63			3 V			GND	"			GND			GND	"	Y1	9.0		9.0		9.0		"
"		64			GND			3 V	"			GND			GND	"	Y2	"		"		"		"
"		65			GND			GND	"			3 V			GND	"	Y3	"		"		"		"
"		66			GND			GND	"			GND			3 V	"	Y4	"		"		"		"
V_{IL3}		67			4 V			GND	"			GND			GND	15 V	Y1		1.5		1.5		1.5	"
"		68			GND			4 V	"			GND			GND	"	Y2		"		"		"	"
"		69			GND			GND	"			4 V			GND	"	Y3		"		"		"	"
"		70			GND			GND	"			GND			4 V	"	Y4		"		"		"	"
"		71			4 V			GND	"			GND			GND	"	Y1	13.5		13.5		13.5		"
"		72			GND			4 V	"			GND			GND	"	Y2	"		"		"		"
"		73			"			GND	"			4 V			GND	"	Y3	"		"		"		"
"		74			"			"	"			GND			4 V	"	Y4	"		"		"		"
I_{OL1}		75	0.4 V		"			"	"			"			GND	5 V	Y1	1.6		1.2		2.1		mA
"		76			"	0.4 V		"	"			"			"	"	Y2	"		"		"		"
"		77			"			"	"	0.4 V		"			"	"	Y3	"		"		"		"
"		78			"			"	"			"	0.4 V		"	"	Y4	"		"		"		"
"		79		0.4 V	5 V			"	"			"			"	"	Y1	0.8		0.55		1.0		"
"		80			GND		0.4 V	5 V	"			"			"	"	Y2	"		"		"		"
"		81			"			GND	"		0.4 V	5 V			"	"	Y3	"		"		"		"
"		82			"			"	"			GND		0.4 V	5 V	"	Y4	"		"		"		"
I_{OL2}		83	1.5 V		"			"	"			"			GND	15 V	Y1	12.0		8.0		14.0		"
"		84			"	1.5 V		"	"			"			"	"	Y2	"		"		"		"
"		85			"			"	"	1.5 V		"			"	"	Y3	"		"		"		"
"		86			"			"	"			"	1.5 V		"	"	Y4	"		"		"		"
"		87		1.5 V	15 V			"	"			"			"	"	Y1	4.5		3.0		5.5		"
"		88			GND		1.5 V	15 V	"			"			"	"	Y2	"		"		"		"
"		89			GND			GND	"		1.5 V	15 V			"	"	Y3	"		"		"		"
"		90			GND			GND	"			GND		1.5 V	15 V	"	Y4	"		"		"		"

See footnotes at end of device type 55.

TABLE III. Group A inspection for device type 55 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D, T,X,Y	For terminal conditions and limits, see 1/														Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_C = 25°C		Subgroup 2 T_C = 125°C		Subgroup 3 T_C = -55°C		
		Test no.	Y1	$\overline{Y1}$	A1	Y2	$\overline{Y2}$	A2	V_{SS}	Y3	$\overline{Y3}$	A3	Y4	$\overline{Y4}$	A4	V_{DD}		Min	Max	Min	Max	Min	Max	
I_{OH1}		91	4.6 V		5 V			GND	GND			GND			GND	5 V	Y1	-1.4		-1.0		-1.75		mA
"		92			GND	4.6 V		5 V	"			GND			GND	"	Y2	"		"		"		"
"		93			"			GND	"	4.6 V		5 V			GND	"	Y3	"		"		"		"
"		94			"			"	"			GND	4.6 V		5 V	"	$\underline{Y4}$	"		"		"		"
"		95		4.6 V	"			"	"			"			GND	"	$\underline{Y1}$	-0.6		-0.4		-0.75		"
"		96			"		4.6 V	GND	"			"			"	"	$\underline{Y2}$	"		"		"		"
"		97			"			"	"		4.6 V	"			"	"	$\underline{Y3}$	"		"		"		"
"		98			"			"	"			"		4.6 V	"	"	$\underline{Y4}$	"		"		"		"
I_{OH2}		99	13.5 V		15 V			GND	"			"			"	15 V	Y1	-9.0		-6.0		-11.0		"
"		100			GND	13.5 V		15 V	"			"			"	"	Y2	"		"		"		"
"		101			"			GND	"	13.5 V		15 V			"	"	Y3	"		"		"		"
"		102			"			"	"			GND	13.5 V		15 V	"	$\underline{Y4}$	"		"		"		"
"		103		13.5 V	"			"	"			"			GND	"	$\underline{Y1}$	-4.0		-2.7		-4.8		"
"		104			"		13.5 V	GND	"			"			"	"	$\underline{Y2}$	"		"		"		"
"		105			"			"	"		13.5 V	"			"	"	$\underline{Y3}$	"		"		"		"
"		106			"			"	"			"		13.5 V	"	"	$\underline{Y4}$	"		"		"		"
I_{IH1} 5/	3010	107			18 V			18 V	"			18 V			18 V	18 V	All inputs together		400					nA
I_{IH2}	"	108			18 V			GND	"			GND			GND	"	A1		100		100			"
"	"	109			GND			18 V	"			GND			GND	"	A2		"		"			"
"	"	110			"			GND	"			18 V			GND	"	A3		"		"			"
"	"	111			"			GND	"			GND			18 V	"	A4		"		"			"
I_{IL1} 5/	3009	112			"			GND	"			GND			GND	"	All inputs together		-400					"
I_{IL2}	"	113			GND			18 V	"			18 V			18 V	"	A1		-100		-100			"
"	"	114			18 V			GND	"			18 V			18 V	"	A2		"		"			"
"	"	115			18 V			18 V	"			GND			18 V	"	A3		"		"			"
"	"	116			18 V			18 V	"			18 V			GND	"	A4		"		"			"
																		Subgroup 4 T_C = 25°C						
																		Min	Max					
C_i	3012	117			A 6/				GND							GND	A1		12.0					pF
"	"	118						A 6/	"							"	A2		"					"
"	"	119							"			A 6/				"	A3		"					"
"	"	120							"						A 6/	"	A4		"					"

See footnotes at end of device type 55.

TABLE III. Group A inspection for device type 55 – Continued.

Symbol	MIL-STD-883 method	Cases A,C,D, T,X,Y	For terminal conditions and limits, see 1/														Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 9 T_C = 25°C		Subgroup 10 T_C = 125°C		Subgroup 11 T_C = -55°C		
		Test no.	Y1	$\overline{Y1}$	A1	Y2	$\overline{Y2}$	A2	V_{SS}	Y3	$\overline{Y3}$	A3	Y4	$\overline{Y4}$	A4	V_{DD}		Min	Max	Min	Max	Min	Max	
t_{PHL}	3003 Fig. 3	121	OUT		IN				GND							5.0 V	A1 to Y1	6.0	115	9.0	172	6.0	115	ns
"	"	122				OUT		IN	"							"	A2 to Y2	"	"	"	"	"	"	"
"	"	123							"	OUT		IN				"	A3 to Y3	"	"	"	"	"	"	"
"	"	124							"				OUT		IN	"	A4 to $\overline{Y4}$	"	"	"	"	"	"	"
"	"	125		OUT	IN				"							"	A1 to $\overline{Y1}$	"	"	"	"	"	"	"
"	"	126					OUT	IN	"							"	A2 to $\overline{Y2}$	"	"	"	"	"	"	"
"	"	127							"		OUT	IN				"	A3 to $\overline{Y3}$	"	"	"	"	"	"	"
"	"	128							"					OUT	IN	"	A4 to Y4	"	"	"	"	"	"	"
t_{PLH}	"	129	OUT		IN				"							"	A1 to Y1	"	125	"	188	"	125	"
"	"	130				OUT		IN	"							"	A2 to Y2	"	"	"	"	"	"	"
"	"	131							"	OUT		IN				"	A3 to Y3	"	"	"	"	"	"	"
"	"	132							"				OUT		IN	"	A4 to $\overline{Y4}$	"	"	"	"	"	"	"
"	"	133		OUT	IN				"							"	A1 to $\overline{Y1}$	"	110	"	165	"	110	"
"	"	134					OUT	IN	"							"	A2 to $\overline{Y2}$	"	"	"	"	"	"	"
"	"	135							"		OUT	IN				"	A3 to $\overline{Y3}$	"	"	"	"	"	"	"
"	"	136							"					OUT	IN	"	A4 to Y4	"	"	"	"	"	"	"
t_{THL}	3004 Fig. 3	137	OUT		IN				"							"	Y1	"	50	"	75	"	50	"
"	"	138				OUT		IN	"							"	Y2	"	"	"	"	"	"	"
"	"	139							"	OUT		IN				"	Y3	"	"	"	"	"	"	"
"	"	140							"				OUT		IN	"	$\overline{Y4}$	"	"	"	"	"	"	"
"	"	141		OUT	IN				"							"	$\overline{Y1}$	"	110	"	165	"	110	"
"	"	142					OUT	IN	"							"	$\overline{Y2}$	"	"	"	"	"	"	"
"	"	143							"		OUT	IN				"	$\overline{Y3}$	"	"	"	"	"	"	"
"	"	144							"					OUT	IN	"	Y4	"	"	"	"	"	"	"
t_{TLH}	"	145	OUT		IN				"							"	Y1	"	70	"	105	"	70	"
"	"	146				OUT		IN	"							"	Y2	"	"	"	"	"	"	"
"	"	147							"	OUT		IN				"	Y3	"	"	"	"	"	"	"
"	"	148							"				OUT		IN	"	$\overline{Y4}$	"	"	"	"	"	"	"
"	"	149		OUT	IN				"							"	$\overline{Y1}$	"	120	"	180	"	120	"
"	"	150					OUT	IN	"							"	$\overline{Y2}$	"	"	"	"	"	"	"
"	"	151							"		OUT	IN				"	$\overline{Y3}$	"	"	"	"	"	"	"
"	"	152							"					OUT	IN	"	Y4	"	"	"	"	"	"	"

1/ Input pins not designated may be tied to V_{DD} (or 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.

2/ Terminal 16 is not connected for device types 53 and 54.

3/ Test parameter $V_{IC(pos)}$ does not apply to device types 53 and 54.

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

5/ 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.

6/ (A) Capacitance bridge between measured terminal and V_{SS}; frequency = 1 MHz.

7/ Test limits t_{PHL}, t_{PLH}, t_{THL}, and t_{TLH} for device types 51/53 and 52/54 consists of two sets of values and are expressed XXX/XXXX in the limits column. The digits preceding the slash apply to the first device in a set.

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	
	01-05	51-55
I_{SS}	±20 nA	±20 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	
		01-05	51-55
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 max	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_{CC} and V_{DD} = 10 V dc
01, 51	3, 5, 7, 9, 11, 14	8	1, 16
02, 52	3, 5, 7, 9, 11, 14	8	1, 16
03, 53	3, 5, 7, 9, 11, 14	8	1
04, 54	3, 5, 7, 9, 11, 14	8	1
05, 55	3, 6, 10, 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 packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the military service's system commands. 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.

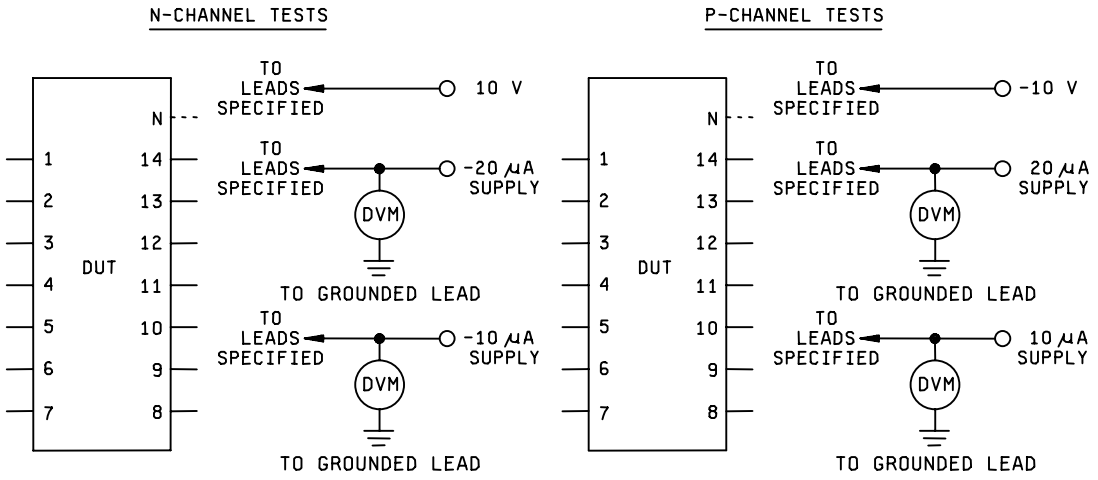


FIGURE 4. Threshold-voltage test circuit.

TABLE VII. Threshold-voltage test circuit conditions.

Device	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	1, 16		5, 7, 8, 9, 11, 14	3	5, 7, 8, 9, 11, 14		1, 16
02, 52	3	1, 16		5, 7, 8, 9, 11, 14	3	5, 7, 8, 9, 11, 14		1, 16
03, 53	3	1		5, 7, 8, 9, 11, 14	3	5, 7, 8, 9, 11, 14		1
04, 54	3	1		5, 7, 8, 9, 11, 14	3	5, 7, 8, 9, 11, 14		1
05, 55	3	14		6, 7, 10, 13	3	6, 7, 10, 13		14

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Microcircuits conforming to this specification are intended for original equipment design applications and logistic support of existing equipment.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of the specification.

b. PIN and compliance identifier, if applicable (see 1.2).

c. Requirements for delivery of one copy of the 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.
T_A ..... Free air temperature.
I_{DD} and I_{CC} ..... DC supply current.
I_{GND} ..... DC ground current.
I_{SS} ..... Quiescent supply current.
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 will 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	4009A
02	4010A
03	4049A
04	4050A
05	4041A
51	4009UB
52	4010B
53	4049UB
54	4050B
55	4041UB

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

Preparing activity:
DLA - CC

(Project 5962-2066)

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

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